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ABSTRACT

An inventory of courses of study developed by the United States Navy which might be useful to other private and public institutions in training civilian students in basic technological skills is presented. Individual course reports contain the following information: course description, comments, course content (including blocks of instruction and hours), support materials, training aids, equipment, tools, and supplies and materials. Courses are listed for the following career fields: air conditioning and refrigeration, audiovisual equipment (operation), audiovisual equipment (repair), automotive trades, aviation trades, construction trades, computers and electronic data processing (repair), computers and electronic data processing (operation), education and training, electricity and electronics, firefighting, food service, graphic arts, instrument repair, management science, marine science, marine science (engineering), marine science (navigation), marine science (seamanship), medical services, metal trades, meteorology, oceanography, and personal services. The courses presented are designated as "prep", "basic", "advanced", "special", and "short". Production by the Naval Institute of particular course packages presented in the report will be undertaken in response to the expressed needs of civilian educational institutions. (LH)

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AN INVENTORY OF U.S. NAVY COURSES SUITABLE FOR USE IN TRAINING CIVILIAN PERSONNEL IN BASIC TECHNICAL SKILLS

FEB 02 1976

By

William A. Rogers, Jr.

and

Michael J. Nisos

April 15, 1975

Published By

THE NAVAL INSTITUTE
Annapolis, Md.

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Publisher's Note

With the exception of the Basic Electricity and Electronics Individualized Learning System School Packages, the printed materials, films, transparencies, video tapes, audio tapes, and other materials listed in the "Support Materials" sections of these course reports are not now (15 April 1975) available. It is the intention of the Naval Institute, with Navy cooperation and support, to make reproduction copies of these materials on a priority basis in response to expressed needs as time and funding permit. As the materials for a given course can be reproduced, course packages will be made available for purchase by individual education/training activities.

Any and all queries should be addressed to Publisher, U.S. Naval Institute, Annapolis, Maryland, 21402, not to any activity of the U.S. Navy.

RTE Bowler Jr

R. T. E. Bowler, Jr.

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The preparation of this report would have been impossible without the splendid cooperation and support of the officers and non-commissioned officers of the many U. S. Navy training activities, in particular of the U. S. Navy Technical Training Command, Health Services Education and Training Command, and the Training Commands of the Navy Construction Battalions, who have our thanks, gratitude, and everlasting respect.

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INTRODUCTION

The data presented in this report was collected and edited over the nine month period beginning July 1, 1974 and ending March 31, 1975. Within that time frame, 1500 courses in the various school catalogues were evaluated, and then thirty seven Naval Commands were visited by two investigators who screened approximately 400 training courses by conducting in-depth interviews with key Navy training personnel.

The purpose of these investigations was to identify those courses of study developed by the U.S. Navy which might be useful to other institutions, both public and private, that have as their mission the training of civilian students in basic technological skills. Since the cost in money, time, and effort to develop such courses of study from "scratch" is considerable, significant savings can be realized when the painstakingly developed instructional objectives, curriculum guides, lesson plans, and matching learning materials, so successfully utilized by the Navy in its training programs, are made available to civilian institutions which face the challenge of training students in the basic skills required to enter construction, electronic, food preparation, paramedical, mechanical, graphic arts, and other trades that are common to both military and civilian industry.

The individual Course Reports presented here have been prepared with this idea in view. Not only the course content, but the learning materials intrinsic in each curriculum design have been inventoried in terms that make it possible to estimate the funding, time, and effort that will be involved in copying the essential elements in each design and then packaging them to make widespread distribution possible.

At this time, the Naval Institute already has produced a packaged version of the Navy Basic Electricity and Electronics Individualized Learning System and has completed distribution to approximately one hundred high schools throughout the country where it will be introduced in the fall of 1975. The production of several additional course packages is planned in the near future. Through a similar program started in 1972 which involves U.S. Air Force training materials, the Aerospace Education Foundation which cooperated in the preparation of this report, has to this date distributed one or more of eight individual U.S. Air Force course packages to over five hundred community colleges, high schools, and other educational institutions in the U.S. and Canada. The feedback from this operation indicates excellent learning achievements as well as significant savings when these materials are used in civilian settings.

Through accident rather than design, the investigations leading to this report were undertaken at a time when Navy training was undergoing a significant metamorphisis. Historically, the Navy training effort had been instructor- rather than student-centered. Recently, however, and especially in the area of technical training, the Navy has taken on an exciting new look. It is now in the process of redesigning its course systems as student-centered, modularized, individualized, self-paced packages that are criterion- rather than norm-referenced. The fact that preparation of this report coincided with the start of this new-look era did cause some delays in the publication of the report, but it also made possible the identification of a significant number of these new, individualized course packages which can be transfered to civilian settings as complete systems rather than as ancillary materials which might best be used to augment existing instructor-centered curriculum designs. These new-look course systems are identified, in the Comments sections where applicable, as "self-paced", Modularized", or "individualized", and they deserve prime consideration as candidates for distribution to the civilian education community.

Classically, Navy schools have been identified on an A, B and C basis, with "A" schools being the introductory level to any specialty area, "B" schools representing the advance training level, and "C" schools being those which present training in a particular technical system, technique, or highly specialized, one-of-a-kind piece of equipment. Many of the courses presented in this report are still designated in the Navy Training Command on this A, B, and C basis, but with the advent of the "New-look" has also come a new descriptive vocabulary to designate the level of Navy courses. It is for this reason that in the Course Reports presented here the designations may differ from those that will be found in the official navy catalogues.

The courses presented here are designated as "P" or "Prep" courses, "Basic" courses, "Advanced" courses, "Special" courses, and "Short" courses. While these designations are more or less self-explanatory, definitions are in order to avoid any possible confusion.

"P" or "Prep" - This is a new kind of Navy course just now being introduced. It offers core training in concepts and skills that are common to a number of specialty ratings. For example, the Navy Basic Electricity and Electronics Course is the common core introductory curriculum for some 30 different Navy specialty ratings. It is therefore designated as a "P" course.

"Basic" - While sometimes preceded by a "P" course, a Basic course is the elementary or introductory course in any specialty area. It is what was, and in some cases still is, called an "A" course. It might be termed the apprentice level.

"Advanced" - Often referred to as a "B" course, the Advanced level course is that which leads to higher responsibilities in any rating area. Prerequisite to such courses are the Basic courses and usually some on-the-job experience in the fleet or ashore. It might be called the journeyman level.

"Special" - Those courses designated as "Special" in this report are those designated in the Navy catalogues as "C" courses. Special courses usually demand as a prerequisite a Basic course; however, they can sometimes be taken without completion of a Basic curriculum. A Basic course plus an Advanced course plus several Special courses and long years of on-the-job experience would normally represent what in civilian terms would amount to the term "Master" such as master electrician or master carpenter.

"Short Courses" - Short courses presented in this report are not generally taught within the Navy formal school system. They are courses administered by the Fleet Training Commands to up-date and up-grade personnel assigned to the Fleet while their vessels are in home-port for repair, refit, or reprovisioning.

The Course Report format utilized in this Inventory is an effort to present as much data as is possible in a minimum of space. Individuals interested in acquiring more detailed information about the content of any course system contained in this report, should contact Naval Institute, Annapolis, Md. 21402. A complete file of the Curriculum Outlines of the courses in this report is maintained and these will be made available for the minimal cost of copying, handling, and postage.

Asstated in the Publisher's Note, the Naval Institute, at the time this report is published, does have available for sale the Navy Basic Electricity and Electronics Individualized Learning System in package form. A detailed course summary and price sheet, as well as "preview kits" in three versions (sound/slide, 3/4" video tape cassettes, or 1/2" video tape reel-to-reel), are available on request. Please specify desired version of preview kit. Announcements concerning the availability of other course systems in this report will be made to the civilian education community as the packages are published by the Institute in response to expressed needs.

Any civilian educational institutions which would like the Naval Institute to undertake production of particular course packages should so advise the Publisher, U.S. Naval Institute, Annapolis, Md. 21402.

Any and all queries concerning the contents of this

Inventory of Navy Courses should be addressed to the Naval Institute, not to any activity of the U.S. Navy.

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Career Field: Air Conditioning and Refrigeration

Course: AIR CONDITIONING AND REFRIGERATION REPAIRMAN (BASIC)

Catalogue No.: A-720-0011/SD Course Date: 7/15/73

Course Description:

This course provides training in the operation and maintenance of refrigeration and air conditioning equipment. Training in maintenance is limited to preventive maintenance, location and correction of troubles, and making repairs on mechanical components of the plant equipment, although the course includes the technical knowledge and skills normally associated with design engineering.

Comments:

Although there is no formal prerequisite to this course the Navy provides this training only to those students who have achieved a considerable amount of on-the-job experience in electro-mechanical trades within the fleet. Because they have no civilian application, Blocks I and IX have been eliminated from this course report.

Due to the extensive equipment requirements of the course design, civilian institutions may be hard-put to arrange to have many of the items specified on-hand for student use. The course design, however, includes sufficient theory and other non-hands-on-activities to provide the basis for a modified version in which only elementary, hands-on activities would be required.

Course Content:

Blocks		Hours
II	Fundamentals of Refrigeration	24
III	Refrigeration Systems and Controls	30
IV	Refrigeration Equipment	30
V	Self-Contained Refrigeration Units	30
VI	Operating and Maintaining Main Refrigeration Plants	30

AIR CONDITIONING AND REFRIGERATION REPAIRMAN (Cont'd)

VII	Introduction to Air Conditioning	30
VIII	Chilled Water System	29
	TOTAL	203*

Note: *Extracted from a 240-hour Navy course.

Support Materials:

1. Instructor materials include a curriculum guide totaling 161 pages.
2. Student materials include texts, handbooks, and workbooks totaling approximately 1,121 pages.
3. Eight black and white films totaling 105 minutes.
4. 72 Transparencies
   1 commercial-color, 35MM slide/audio tape presentation

Equipment:

16mm Projector
35mm Slide Projector
Overhead Projector
Projector Screen
Air conditioning plant
Anemometer
Asperated psychrometer, hand and motor operated
Automatic expansion valves Alco and Detroit
Bellows line stop valve Mueller
Bi-metal thermostatic switch
Capillary tube
Carrier compressors
Centrifugal refrigeration compressors, York 80 ton and Carrier 17M
Charts, psychrometrics (Carrier Corp)
Chilled water trainer
Circular diffusing terminal
Closures (various types)
Compressor stop valves Mueller and Kerotest
Compressor relief valves Henry and Mueller
Condenser air cooled
Flexible refrigeration connectors
Water cooled condenser

AIR CONDITIONING AND REFRIGERATION REPAIRMAN (Cont'd)

Connecting rod bearings precision, semiprecision, and nonprecision
Cooling coils (installed in air conditioning plant)
Dehydrator
Diaphragm line stop valves, Henry and Mueller
Evaporator pressure regulating valves Alco
Filter type air purifiers
Frick compressors, 4 1/4" x 3"
Frozen food cabinet
General Electric compressors, GM 502G and CW3
Pressure Gauges
Hand expansion valve
Heater (cutaway)
Heat exchanger
Ice cream maker, soft, Taylor Model 777
Ice cube maker
Installed heaters
Leak detectors
Liquid strainer
Mufflers
Oil pressure switches
Packaged air conditioning units, window and space types
Pistons, single and double trunk
Prefabricated chilled water air conditioning plant, 18-ton capacity
Pressure switches, Detroit and Penn
Pressure switch test board
Psychrometer, wall mounted
Reach-in refrigerators
Refrigerated counter
Refrigerated plants, Carrier and York
Refrigerated storage cabinet for dispensing packaged drinks and ice
School ventilation ducts
Sight glass
Sink for cleaning filter type purifiers
Shaft seals, diaphragm, flexo, stationary bellows, rotation bellows, rotary
Sling psychrometer
Soda fountain
Solenoid valves
Steam traps, all types
System cleaner, York
Thermal elements, Model L, R, T, and W
Thermal expansion valves, Alco and Detroit
Thermometers, pocket and recording

Thermostatic switches, Detroit and Penn
Two-position dual control system (actual installation)
Vacuum pump
Valve plate assembly, diaphragm, reed and ring
Valves, temperature regulating valves, Models D, E, G, H, and K
Velocimeter
Ventilation closures
Water coolers
Water regulating valves, electromatic, Penn and Spence
Wing cap line stop valve, Henry
York compressors, 2 5/8" x 2 1/2", 4" x 4"

Tools:

Tool Kit No. 1

Socket set, 1/4" drive, Bonny refrigeration set
Socket set, 1/2" drive, 3/8" to 1"
Wrenches, allen, adjustable 6" to 8", combination 3/8" to 1", refrigeration ratchet
Machinist's hammers
Common, Offset, and Phillips screwdrivers
Plastic, rawhide, and copper mauls
6" scale steel rules

Special Tool Kit No. 1

Cylinder liner puller
Outside micrometer, 0" to 1"
Depth micrometer, 0" to 1"
Ring gauges, minimum and maximum
Shaft seal tension gauge
Feel gauge

Tool Kit No. 2

Brush, stiff bristle
Tube cutters
Common (plastic handle) screwdriver, offset and Phillips
Socket set, Bonny refrigeration 1/4" drive
Flaring set tube
Wrenches, allen box combination, crescent (10"), cylinder, flare nut, open end

Special Tool Kit No. 2

Gage manifold, hoses, refrigerant compound, and pressure gauges
Pocket thermometer
Test lamp

Tool Kit No. 3

Tubing cutters
Flat and round files
Machinist's hammer
Pliers
Plastic handle screwdrivers, common and Phillips
Socket set, Bonny refrigeration 1/4" drive (1/2" drive 3/8 to 1")
Flaring set tube
Wrenches, allen combination, adjustable 10" to 12" monkey

Special Tool Kit No. 3

Gage manifold, hoses, refrigerant compound, and pressure gauges
Test lamp
Pocket Thermometer
Refrigeration ratchet wrench
Socket set 1/2" drive 3/8" to 1"
Wrenches, Allen, adjustable 6" to 8"
Wrenches, combination, 3/8" to 1"
Screwdrivers, common, offset, Phillips
Machinist's hammer

Supplies and Materials:

Beakers
Boric Acid
Flexible connector
Copper rod
Cotton absorbent
Filter cleaning solution
Gaskets
Gauze
Glass tubing for Sight Glasses
Charging Hose
Ice cream containers
Ice cream mix

Ice cream sterilizing solution
Insulation materials
Liquid petrolatum
Medicine droppers
Sterile Petrolatum gauze
Oil for spraying filter
Refrigerants 11, 12, 22, 114
Refrigerant oil
Safety goggles
Cylinder charging adapter
Acetylene, cylinder
100 lb. scale
Refrigerants 114 and 12
Petroleum solvent (kerosene)
Lighting off sheets
Breakdown sheets
Tables showing hot gas velocity, suction gas velocity, tonnage capacity of discharge, suction lines, and correction factor
Thermal expansion valve
Water regulating valve
York system cleaning

Cutaways

Dehydrator
Diaphragm line stop valve
Evaporator pressure regulating valve
Hand controlled and magnetic solenoid valve
Liquid strainer
Manual shutoff element
Pressure flow valves
Pressure switches
Refrigeration plant, air cooled
Section of duct with fittings of various kinds
Shaft seal
Solenoid valve
Temperature regulating valves and thermal elements
Thermal elements
Thermal expansion valve
Thermal regulating valve
Various types of fans
Venturi
Water regulating valve
Wing cap stop line valve

Career Field: Audio Visual Equipment (Operation)

Course: 16MM SOUND MOTION PICTURE PROJECTIONIST (SHORT)

Catalogue No.: A-690-010/N Course Date: 9/15/68

Course Description:

This short course trains students to operate and do routine maintenance on 16mm motion picture projectors.

Comments:

All program instruction with a hands-on criterion test at the end of each module. Completely self-paced. The JAN projector is a prototype machine representative of all types of projectors. JAN actually stands for joint Army-Navy design. If an individual can operate this projector, he or she can probably operate almost any type of motion picture projector.

Course Content:

Blocks		Hours
I	Theory of Motion Picture Projection	1
II	Handling and Care of Prints	6
III	Records and Reports	2
IV	Operation of Model 2C Graflex	4
V	Operation of Bell & Howell 552	4
VI	Operation of Model AQ - Joint Army-Navy Prototype Projector	8
	TOTAL	25

Support Materials:

1. Instructor materials include a curriculum guide totaling 36 pages.
2. Student materials include handouts, forms, diagrams,

and programmed instruction totaling 765 pages.

3. 8 Charts
   3 Transparencies

Training Aids:

Thaumatrope - Persistence of Vision Demonstrator (locally prepared)
Flip Booklets
Mockup Display Board of AN/AQ-2(1) Projector
Mockup of Shutter Assembly
Lubrication Charts
Daily Inspection and Cleaning Checklist
Projector Running Log Sheets
Lens Chart
Chart Showing Types of Equipment
Posters on Electrical Shock Hazards

Equipment:

Rewind Tables (complete splicing equipment)
Reels of Damaged Film
Reels of Film
Spare Reels and Reel Banks
Projector Booths for each trainee complete with two projectors for either single or dual operation
Film Bag
AN/AQ-2 and AN/AQ-3 Projectors, assorted models (AN/AQ-3(7) required)
552 Filmo Sound Projector
Miscellaneous Parts to show design changes
Stabilizer Housing and Flywheel Assembly
Cleaning and Lubrication Kits
Miscellaneous Parts damaged through normal use, misuse, lack of proper care
Samples of Various Screen Materials
Hand Rewinders for each projection booth
Extra Amplifiers and speakers

Career Field: Audio Visual Equipment (Repair)

Course: MOTION PICTURE PROJECTOR REPAIR (SPECIAL)

Catalogue No.: A-690-0014/N **Course Date:** 2/15/70

Course Description:

This short course trains the student in preventive and corrective maintenance of 16mm sound, motion-picture projection equipment.

Comments:

This course requires the Navy Basic Electricity and Electronics course as a prerequisite. The course is now programmed and can be presented on an individualized, self-paced basis.

Course Content:

Blocks		Hours
I	Introduction	7
II	Mechanical Maintenance	28
III	Circuit Maintenance	27
IV	Equipment Comparison	1
V	Final Written and Performance Tests	7
	TOTAL	70

Support Materials:

1. Instructor materials include lesson plans, quizzes, a curriculum guide, and a final examination totaling 235 pages.
2. Student materials includes two texts; and homework sheets, trainee guide, information sheets, work and job sheets totaling 166 pages.

MOTION PICTURE PROJECTOR REPAIR (Cont'd)

3. Six black and white films totaling 76 minutes.

4. 3 Charts
   7 Transparencies

Training Aids:

Vacuum Tube Demonstrator

Equipment:

Multimeter
1D Amplifier
1D Loudspeaker
Dial Indicator
Earphones
Feeler gages
Screwdrivers
Long Nose Pliers
Diagonal Cutting Pliers
Set of Allen Wrenches
Set of 1/4" Drive Socket Wrenches
Microphones
Jiffy Test Film
Clearance Gage
Cleaning Solvent
Spring Scale; 16 oz Capacity
Old Film
Tachometer
Overhead Projector
Projection Screen
16mm Motion Picture Projector

Career Field: Automotive Trades

Course: AUTOMATIC TRANSMISSION SPECIALIST (SPECIAL)

Catalogue No.: A-610-0021/GP   Course Date: 1/15/74

Course Description:

This course covers basic hydraulics; fluid couplings; planetary gears; theory and operation of the Chevrolet Power Glide, Ford C-4, Allison 4460 and 3331, International TD-208 powershift and the Hough P-6-0 torque converter. Includes troubleshooting, disassembly, repair, and reassembly, and covers safety precautions and safe use of tools and equipment.

Comments:

Prerequisite for this course is Construction Mechanic (Basic).

Course Content:

Blocks		Hours
I	Orientation	3
II	Basic principles of automatic transmissions	30
III	Powerglide transmission	30
IV	Ford C-4 Cruise-O-Matic transmission	30
V	Allison Torqmatic transmission, Model CLBT 4460-2	37
VI	Allison Torqmatic transmission, Model CRT 3331-1	37
VII	International-Hough torque converters and transmissions	43
VIII	Summary, examination, practical projects	24
	TOTAL	234

AUTOMATIC TRANSMISSION SPECIALIST (Cont'd)

Support Materials:

1. Instructor materials include a curriculum guide totaling 550 pages.

2. Student materials totaling 150 pages.

3. Eight black and white films totaling 89 minutes.
   Two commercial color films totaling 37 minutes.

4. Three commercial filmstrips
   Five commercial charts
   Forty-five transparencies

Equipment:

- Allison, CLBT 4460-2, transmission equipped vehicles
- Allison, Model CLBT 4460-2 transmission overhaul stands
- Allison, Model CLBT 4460-2 transmissions
- Allison, Model CRT 3331-1 transmissions
- Allison, CRT 3331-1 transmission equipped vehicles
- Allison, Model CRT 3331-1 transmission overhaul stands
- Arbor press
- Automatic transmission parts
  - Bands
  - Clutches
  - Front planetary unit
  - Rear planetary unit
  - Governors
  - Servos
  - Pumps, front and rear
- Chain hoist, 1-ton capacity
- Fort C-4 Cruise-O-Matic transmission assorted parts and assemblies
- Ford C-4 Cruise-O-Matic transmission equipped vehicles
- Ford C-4 Cruise-O-Matic transmission holding fixtures
- Ford C-4 Cruise-O-Matic transmissions
- Ford-O-Matic Control Valve Assembly
- Hoist, 2-ton capacity
- Hough Payloader, Model H-65C, equipped with torque converter and powershift transmission
- International powershift transmission overhaul stands
- International powershift transmissions
- International TD 20, Series "B" crawler tractor, equipped with torque converter and power shift transmission
- International Torque converter overhaul stands

International torque converters
Lifting sling
Powerglide equipped vehicles
Powerglide transmission holding fixture
Powerglide transmission parts and assemblies
  Converter
  Planetary gear set
  Front pump
  Rear pump
  Governor
  Control valve body
  Low servo
Powerglide transmissions
16mm motion picture projector
Overhead projector
Filmstrip projector
Projector screen

Tools
Allison, Model CLBT 4460-2 transmission special tools
Allison, Model CRT 3331-1 transmission special tools
Automatic transmission shop hand tools
Ford C-4 Cruise-O-Matic transmission special tools
Gear and bearing puller set
Powerglide transmission special tools
Pressure gauges, 100, 200, 300, 500, 600 psi capacity
Tachometer

Materials and Supplies
Automatic transmission fluid
Cleaning rags
Cleaning solvent
Compressed air
Lined writing pads
Pencils
Powerglide transmission replacement parts
Soluble grease
Trainee folder

Career Field: Automotive Trades

Course: CONSTRUCTION EQUIPMENT MECHANIC (BASIC)

Catalogue No.: A-610-0011/GP Course Date:

Course Description:

This course provides instruction in trouble shooting, overhaul and maintenance of gasoline and diesel engines; automobile and construction-equipment, power train, chassis and component assemblies. This includes valve and cylinder reconditioning, testing and analysis of electrical and fuel injection systems while employing appropriate test equipment.

Course Content:

Blocks		Hours
I	Indoctrination	3
II	Foremanship	8
III	Mathematics, measuring instruments, and diagrams	8
IV	Internal combustion engines	11
V	Electrical systems	61
VI	Engine trouble diagnosis	38
VII	Caterpillar engine adjustments and troubleshooting	28
VIII	International engine adjustments and troubleshooting	26
IX	General motors engine adjustments and troubleshooting	29
X	Cummins engine adjustments and trouble-shooting	17
XI	LD 465-1 multifuel engine	23

XII	Construction equipment power train and chassis units	106
XIII	Automotive chassis and power train	32
XIV	Review, examination, practical work projects	30
	TOTAL	420

Support Materials:

1. Instructor materials include curriculum guide, lesson plans, and examinations totaling 950 pages.

2. Student materials include work sheets, information sheets, charts etc. totaling 500 pages.

3. 33 black and white films totaling 660 minutes.
   28 commercial color films totaling 784 minutes.

4. 11 sets of commercial slides totaling 594 frames.
   8 commercial charts
   7 commercial models

Equipment:

Armature reconditioning kits
Armature tester
Alternators
American Bosch model PSB6A fuel injection pumps
Bacharach injection nozzle test stand and test fixtures
Barrett brake reliner
Barrett brake drum lathe with attachment
Battery starter testers
Brake drums
Brake shoes and lining
Caterpillar capsule fuel injection nozzle
Caterpillar D8-H crawler tractor
Caterpillar fuel injection pumps
Caterpillar fuel injection test apparatus and special tools
Caterpillar 3H1690 rack setting gauge
Caterpillar 5 3/4" bore, 6 cylinder diesel engines
Compression gauge for GM 71 series diesel engines
Cummins NH series diesel engines

Cummins P.T. injectors
Cummins special injector repair tools
Cylinder heads
Distributors
Distributor testers
Fuel injection nozzles for LD 465-1 multifuel engines
Galion, model 118 motor grader
Gasoline engines
General Motors high valve unit injectors
General Motors special tools for servicing GM unit injectors
General Motors V6-71E diesel engines
Generators
Handtools
Hydraulic systems components
International fuel injection nozzles
International TD20 series "B" crawler tractor
Joy, RPS 600, air screw compressor
Kiene test kit, No. KTP501
Mark III A-FPB, fluid power training unit for hydraulics and pnematics, Technical Equipment Co., Inc., Ferndale, MI 48220
Mechanical steering systems
Mercury manometer
Micrometer calipers
Model AFC, Simpson engine analyser
M-R-S Model I-110 diesel wheel tractor
Multifuel engines, model LD465-1
Northwest, model 6 crane
Oscilloscope engine performance analyzers, Marquette Dynavision Model 800
Parker Hannifin hose kit
Rectifiers
Regulators
Roosa master fuel injection pumps
Roosa master special tool kit and mounting fixtures
Ross HP 70 power steering system
Special tools for servicing American Bosch, Model PSB6A fuel injection pumps
Starting motors
Unitest Universal fuel injection test stand, Model U-4500 with various fuel system adapters
UDT 429 series, International diesel engines
UDT 817 series, International diesel engines
Valve refacing machines
Valve reseating machines
Volt-Amp testers
Water manometer
Wheel alignment equipment

Wheel balancing machine
Motion picture projector
Overhead projector
Projector screen

Tools
American Bosch PSB6A fuel injection pump special tools
Automotive hand shop tools
Brake bleeder
Calipers
Caterpillar capsule fuel nozzle special tools
Caterpillar fuel injection pump special tools
Dial indicators
Diesel engine shop handtools
General Motors unit injector special tools
General Motors, 71 series, diesel engine special tune-up tools
Heavy equipment shop hand tools
International fuel injection nozzle special tools
Micrometers
Multifuel LD465 fuel injection nozzle special tools
Roosa master fuel injection pump special tools
Steel rules

Materials and Supplies
Automotive electrical wire
Brake drums
Brake fluid
Brake system parts
Chassis lubricants
Cleaning solvent
Cleaning tissue
Diesel fuel
Electrical connectors
Engine oil
Filtered compressed air
Gasoline
Hydraulic fluid
Hydraulic hose and fittings
Solder
Starting motor and generator parts
Wiping rags

Career Field: Automotive Trades

Course: CONSTRUCTION MECHANIC (BASIC)

Catalogue No.: A-610-0022/PH **Course Date:** 12/15/74

Course Description:

This course furnishes students with basic technical knowledge and trains them in the skills needed to perform maintenance and repair on automotive and heavy construction equipment. It covers such areas as: internal combustion engine principles, assembly and disassembly, inspection, diagnosis and adjustment; Caterpillar, International, General Motors and Cummins diesel engines; multifuel engines; suspension and brake systems; and automotive power trains.

Comments:

The Navy utilizes interactive presentation, demonstrations, peer instruction, self-study, etc. to teach this course. Of the total course hours, 232 hours are devoted to performance-oriented training. It should be noted that rather large and costly equipment is used to teach this course; municipal engineering or highway departments or local construction firms may be contacted for possible use of their equipment.

Course Content:

Blocks		Hours
I	Gasoline engines	104
II	Diesel engines	149
III	Automotive chassis and power train	83
IV	Heavy equipment chassis and power train	52
	TOTAL	388

Research Notes: Extracted from 395-hour Navy course.
Civilian-related material: 98%.

CONSTRUCTION MECHANIC (BASIC) (Cont'd)

Support Materials:

1. Instructor materials include a curriculum outline, lesson plan, examinations, and checksheets totaling 613 pages.

2. Student materials including study guides and handouts total 217 pages. Several standard Navy and commercially available texts are also utilized.

3. Sixteen black and white films totaling 233 minutes.
   One color film totaling 23 minutes.
   Seven commercial black and white films totaling 177 minutes.
   Eight commercial color films totaling 205 minutes.

4. Forty commercial transparences
   Sixteen commercial charts
   Twelve commercial slide sets

Equipment:

- Motion picture projector
- Motion picture screen
- Overhead projector
- Transparency projector
- Cutaways:
  - Caterpillar diesel engine
  - Diesel engine
  - Cummins P.T. pump
  - American Bosch model PSB6A fuel injection pump
  - Manual 5-speed transmission
  - Double reduction differential assembly
  - International P-29 cable control unit
  - Roosa-Master fuel injection pump
  - Caterpillar turbocharger
- Caterpillar D4D crawler tractor
- Caterpillar D333 diesel engine
- Caterpillar D342 diesel engine
- Cummins NH250 diesel engine
- Ford 240 CI 6 cyl. gasoline engine
- GM V6-71 diesel engine
- GM 6-71 diesel engine
- 1HC UDT 429 diesel engine
- 1HC model 260 power control unit
- LD 465-1 multifuel engine

CONSTRUCTION MECHANIC (BASIC) (Cont'd)

M715 1 1/4-ton cargo truck
Oxy-Mapp gas cutting outfit
Portable lubrication unit
Portable steam cleaner
Tire demounter
2 1/2-ton M series 6 x 6 truck
5-ton M series 6 x 6 truck
Automotive handtools/W cabinet
Automotive shop tools
Battery shop tools
Brake fluid dispensers
Caterpillar crawler tractor tools
Caterpillar diesel engine special tools
Cummins diesel engine special tools
Diesel engine handtools
Diesel engine shop tools
GM diesel engine special tools
Grease guns
Heavy equipment handtools
Heavy equipment shop tools and equipment
International diesel engine special tools
Lubricating oil dispensers
Measuring instruments
Tire shop tools
Welding shop handtools
Tool kit brake service
Gasoline and diesel engine parts
Batteries
Brake system parts kit
Caterpillar fuel filters
Caterpillar air filters
Caterpillar oil filters
Charging system components
Chassis grease
Cleaning solvent
Cold and hot patch kit
Cranking system components
Cummins air filters
Cummins oil filters
Diesel fuel (drummed) DF2
I.C.E. engine oil HDO 30
Distilled water (5 gal. Cont)
Face shields
Ford engine gasket sets
Gasoline (drummed)
Gear oil EP 90
GM diesel air filters

GM diesel fuel filters
GM diesel oil filters
Hydraulic brake fluid
Torch igniters
Flint igniters
Ignition system components
International air filters
International fuel filters
International oil filters
MAPP gas (bulk)
Cylinder MAPP gas
Multifuel engine air filters
Multifuel engine oil filters
Multifuel engine fuel filters
Welding oxygen
Cylinder oxygen
Scrap sheet metal
Oil and water sweeping compound
Tires
Tubes
Tubeless tire repair kits
Welding gloves
Welding apron
Welding goggles (lens shade 6)
Welding hose
Welding tip cleaner
Cutting and welding torch outfit
Cutting and welding cart outfit
Welding tips
Wiping rags
Plastigage .001-.003
Battery hydrometer
Battery starter testers
Compression tester
Cooling system pressure tester
Tach-Dwell meter
Timing light
Vacuum gauge

J

Career Field: Automotive Trades

Course: CONSTRUCTION MECHANIC/AUTOMOTIVE ELECTRICAL MAINTENANCE (ADVANCED)

Catalogue No.: A-610-0026/GP **Course Date:** 1/15/74

Course Description:

This course covers fundamentals of automotive electrical systems; semi-conductors and soldering techniques; electrical test equipment and application, including electrical test meters, electrical test maintenance, cranking motor system, electrical test equipment, testing, and maintenance, testing and troubleshooting. Includes both theory and practical work in areas mentioned as well as safety and correct use of equipment.

Comments:

Prerequisite for this course is Construction Mechanic (Basic).

Course Content:

Blocks		Hours
I	Orientation	3
II	Automotive electrical principles	28
III	Electrical test equipment	40
IV	Storage batteries	4
V	Cranking motor and switches	6
VI	Ignition systems	8
VII	Direct current charging systems	6
VIII	Semiconductors	6
IX	Alternating current charging systems	19
X	Review, examination, practical projects	25
	TOTAL	145

CONSTRUCTION MECHANIC/AUTOMOTIVE ELECTRICAL MAINTENANCE (Cont'd)

Support Materials:

1. Instructor materials totaling 400 pages.
2. Student materials totaling 250 pages.
3. Eight black and white films totaling 170 minutes.
   One commercial color film totaling 27 minutes.
4. 13 commercially available charts.

Equipment:

A-C generators
A-C generator regulators
Sun, Model GAT 660, generator-alternator tester
Sun, Model VAT 28 volt-ampere tester
Simpson multimeter
Sun, Model RDT-11 rectifier diode tester
Automotive electrician's hand tools
Automotive shop hand tools
Cleaning rags
Cleaning solvent
Solid state circuits
Semiconductors
Transistor regulators
Automotive electrician's tool kit
Solder
Sandpaper
Brush seating stone
Commutator lathe
Regulator gauge kit
D-C generators
D-C generator-regulators
Gasoline
Engine oil
Ignition system parts
Sun model EET-1120 electronic engine tester (or equivalent)
Simpson model AFC universal engine analyzer (or equivalent)
Gasoline engines
Simpson waterproof adapter kit
Ignition distributors
Ignition coils
Ammeter
Cranking motors

CONSTRUCTION MECHANIC/AUTOMOTIVE ELECTRICAL MAINTENANCE
(Cont'd)

Cranking switches
Wiring
Cranking motor parts
Hydrometer
Sun Model BC 160 battery charger
12-volt storage batteries
Safety clothing equipment
Battery shop hand tools
Electrolyte
Distilled water
Baking soda
D-C charging system components
A-C charging system components
Gasoline engines equipped with A-C charging systems
Gasoline engines equipped with D-C charging systems
Voltmeter
Tach-dwell meter
Assorted electrical system components
Jumper leads
Soldering irons
Assorted resistors
Automotive circuit wire
Automotive wiring connectors
Soldering guns
Wire cutting tools
Insulation strippers
Heat shunts
Hookup wire
Wire terminals
Insulating tape
Soldering iron cleaning sponges
Low range (sensitive) voltmeter
Low range (sensitive) ammeter
16mm motion picture projector
Projector screen

Career Field: Aviation Trades

Course: AVIATION FUNDAMENTALS (PREP)

Catalogue No.: 600-000/M Course Date: 10/31/73

Course Description:

This course covers exactly what its title implies -- the fundamentals of the aviation career field. Students are instructed in the basic components of aircraft, aircraft support functions, avionics, mechanics, and structures. They are also introduced to the theory of flight and the basics of ground control operations.

Comments:

This is a fully modularized, self-paced course. The Navy splits the course into a common core for all ratings, and a special track for those who are to enter the "mechanic" ratings. The version presented here represents a combination of both the common core and mechanic tracks with "Navy only" blocks eliminated. As edited, this course represents a fine introduction to civilian aviation trades. Time of contact hours are estimates only. Students, working at their own speeds, should be expected to complete their programmed assignments in varying lengths of times.

Course Content:

Blocks		Hours
I	Theory of Flight and Aircraft Nomenclature	1
II	Aircraft Systems	1
III	Cleaning	1/2
IV	Fuels, Oils and Fluids	1/2
V	Support Equipment	1/2
VI	Aircraft Handling	1

AVIATION FUNDAMENTALS (Cont'd)

VII	Taxi Signals	1/2
VIII	Firefighting	1
IX	Corrosion	1/2
X	Measuring, Marking Tools and Drills	1/2
XI	Striking Tools	1
XII	Screwdrivers and Pliers	1/2
XIII	Files and Hacksaws	1
XIV	Wrenches	1
XV	Torquing Equipment	2
XVI	Hardware	2
XVII	Mathematics Review	2
XVIII	Physics (Heat, Gases, Electricity, and Hydraulics)	1
	TOTAL	17 1/2

Support Materials:

1. Instructor materials include examinations, curriculum outline, curriculum guide, and administrative materials totaling 1,600 pages.
2. Student materials include lesson guides, training guides, planned instruction, narrative, and shop instruction totaling 716 pages.
3. 22 sound/slide programs with a total of 22 cassette tapes and 1,300 slides.

Equipment:

Cassette playback unit
Slide projector
Projector screen

Striking Tools
Punches
Chisels
Files
Hacksaws
Vises
Measuring and marking tools and drills
Screwdrivers
Pliers
Wrenches
Aircraft hardware

Career Field: Aviation Trades

Course: AVIATION GROUND SUPPORT EQUIPMENT TECHNICIAN: HYDRAULICS AND STRUCTURES COURSE (BASIC)

Catalogue No.: C-602-2023/M

Course Date: 5/24/74

Course Description:

This course (as opposed to the Aviation Mechanic (basic) course) covers maintenance and repair of chassis, body and hydraulic systems of aviation support vehicles. Students are given instruction in the welding and brazing as well as the protection and finishing of metals.

Comments:

Prerequisite for this course is Aviation Fundamentals School or its equivalent.

Course Content:

Blocks		Hours
I	Aviation Support Equipment Fundamentals	40
II	Metal Working Skills	40
III	Chassis and Brake Maintenance	40
IV	Welding (Oxyacetylene)	40
V	Corrosion Control	40
VI	Hydraulics	40
VII	Maintenance Equipment	40
VIII	Servicing Equipment	40
IX	Line Maintenance	56
	TOTAL	376

AVIATION GROUND SUPPORT EQUIPMENT TECHNICIAN: HYDRAULICS AND STRUCTURES COURSE (BASIC) (Cont'd)

Support Materials:

1. Instructor materials include curriculum outline, curriculum guide, examinations, and other materials totaling 790 pages.

2. Student materials include handouts, worksheets and planned instruction totaling 550 pages.

3. Two color films totaling 64 minutes.
   One commercial black and white film totaling 20 minutes.

4. 145 transparencies
   1 chart

5. One slide/sound presentation consisting of two reel-to-reel tapes totaling 40 minutes and 74 color slides.

Equipment:

Slide projector
Reel-to-reel tape recorder
Overhead projector
Oil and water separator
Pneumatic inflator gage
10-ton jack tripod
5-ton hydraulic jack
3,000 psi portable air cylinder
A/C servicing type B-4 maintenance platform
Aircraft NT-4 towbar
Metal saw band
SH bender brake machine
Reciprocating air compressor (Ingersoll-Rand)
Aircraft jack tester
Trailer hydraulic pump load bank assembly
Airless spray unit
Dry honing machine
Nitrogen cart
Hydrol analysis kit
Hydraulic fill units
Hydraulic hoseburst test stand
Manual floor mounted tire spreader
Brake drum turning lathe
Mounter-demounter
3,000 psi compressor davey

AVIATION GROUND SUPPORT EQUIPMENT TECHNICIAN: HYDRAULICS AND STRUCTURES COURSE (BASIC) (Cont'd)

Polarized disc
Cutaway air compressor
Hydraulic test stand
Aircraft tow tractor
Throatless bech type shear
B & D drill sharpener grinder
Hand operated brake machine box fingers and Adjustable
  gage maximum forming width 24" material cap 16GA steel
52" foot operated shearing machine
Straight drive pneumatic impact wrench; 3/4" square male
  spindle; 3/4" diagonal with air volume torque regulator
Pneumatic impact wrench, 1/2" square drive
Double spindle type utility grinder
10-ton capacity hydraulic type jack-dolly
4-ton hydraulic type jack-dolly
Sander belt and disc
Bench type drill press 1/2 HP 110V
Sheet metal turret type press-punch
Cutting stencil 1", 1/2", 3/4", 1/4"
De Vilbis paint booth, 18' x 40'
Chassis training aids
Auto with brake
Bench mounted hand shear, 24"
Dayton abrasive cut-off saw
6-12 volt battery charger

Career Field: Aviation Trades

Course: AVIATION GROUND SUPPORT ELECTRICAL EQUIPMENT
TECHNICIAN: ELECTRICAL COURSE (BASIC)

Catalogue No.: C-602-2019/M   Course Date: 5/24/74

Course Description:

This course is designed to provide students with understanding of theories and principles applicable to the maintenance of electrical circuitry; a working knowledge of the fundamentals of electricity required for the maintenance of electrical circuitry in ground support vehicles; the ability to select, use and care for hand tools, shop equipment and test equipment; the ability to service and operate typical aviation support equipment; the ability to perform preoperational and periodic maintenance inspections; the ability to service, test and repair air conditioning systems; familiarity with basic troubleshooting techniques.

Comments:

This course is partially individualized. A new course is scheduled for completion in September, 1976.

Course Content:

Blocks		Hours
I	Aviation Support Equipment Fundamentals	40
II	Basic Electricity and Electronics	120
III	Diagrams and Use of Electrical Tools	32
IV	Automotive Circuits and Batteries	34
V	Automotive Components	48
VI	Motor Driven Equipment and Systems	54
VII	Power Generating Equipment	72
VIII	Air Conditioning Fundamentals	40

AVIATION GROUND SUPPORT ELECTRICAL EQUIPMENT TECHNICIAN: ELECTRICAL COURSE (BASIC) (Cont'd)

IX	Mobile Air Conditioners	56
	TOTAL	496

Support Materials:

1. Instructor materials include curriculum outline, curriculum guide, examinations, and other materials totaling 757 pages.

2. Student materials include handouts, work sheets, and planned instruction totaling 2,004 pages.

3. Eleven black and white films totaling 330 minutes

4. 68 transparencies
   10 charts

Equipment:

Charger battery wall
Megger, model M1000B
Load bank tester
Trailer air conditioner
Control box AC
Control Box DC
Power plant, AC/DC 400 cyc., 30 KVA - 500 amp
Growler, armature test
Power unit, resistance
Jack, 10 ton
Starter, engine
Generator assembly
Simpson multimeter 260
Tester, tube
Motion picture projector
Overhead projector
Auto cranking demonstrator
Generator-automotive cut-away
Magneto cut-away
Air conditioning and refrigeration mobile unit
Lab volt power supply
Battery charger
General Electric electronic leak detector
Undercutter armature lathe

AVIATION GROUND SUPPORT ELECTRICAL EQUIPMENT TECHNICIAN: ELECTRICAL COURSE (BASIC) (Cont'd)

Split phase AC 1/4 hp motor
Alternator Sun Electric generator tester
Sun Electric starter tester
Volt-AMP tester
Delco Remy alternator
Power plant, AC/DC 500 amp 400 cyc.
Tow tractor
Welding unit
Brazing unit
Overhead projector

Career Field: Aviation Trades

Course: AVIATION GROUND SUPPORT EQUIPMENT TECHNICIAN MECHANICAL COURSE (BASIC)

Catalogue No.: C-602-2024/A

Course Date: 5/24/74

Course Description:

This is the basic course in aircraft and ground support mechanics taught by the Navy. The course covers fundamental maintenance and repair procedures as well as operational theory of engines and related support equipment. Both gas and diesel engines are taught along with other power-train components of ground support equipment. Air conditioning and gas turbine compressors are also covered.

Comments:

Students should be graduates of Aviation Fundamentals.

Course Content:

Blocks		Hours
I	Aviation Support Equipment Fundamentals	40
II	Gasoline Engines	36
III	Mechanical Systems (Gasoline)	30
IV	Electrical Systems	38
V	Diesel Engines	80
VI	Power Trains	36
VII	Air Conditioning and Gas Turbine Compressors	47
VIII	Equipment Maintenance	69
	TOTAL	376

AVIATION GROUND SUPPORT EQUIPMENT TECHNICIAN MECHANICAL COURSE (BASIC) (Cont'd)

Support Materials:

1. Instructor materials include curriculum outline, curriculum guide, examinations, and other materials totaling 758 pages.
2. Student materials include handouts, worksheets, and planned instruction totaling 635 pages.
3. Nine black and white films totaling 213 minutes
   Two color films totaling 47 minutes
4. 116 Transparencies
   63 Charts

Equipment:

Gas turbine compressor hoisting adapter
Preheater for EAPU trailer; P/N AGT 3004
Enclosure for gas turbine
Mobile electric power plant 28V DC 250 amps
Third point maintenance adapter
Adapter maintenance stand
Electric cable assembly (for analyzer MecTERP)
Cast iron plate surface 18" x 24"
Trailer for gas turbine (GTC-85) 6; P/N 58A7961
Air research portable gas turbine compressor stand
Power equipped pneumatic engine analyzer
Tachometer generator
AC to DC rectifier 28V 50 H_2 watts
28V DC Rectifier
Cut-away compressor
Aircraft towing tractor
Diesel aircraft towing tractor
Diesel injector repair tool kit
Double spindle utility grinder
Cleaner and tester spark plug
Electric valve face grinder
10-ton capacity automotive hydraulic type jack dolly
4-ton hydraulic type jack dolly
Cut-away transmission assembly
Drill bench press
Sound protector
Cylinder compression tester
Universal type diesel engine compression gage

AVIATION GROUND SUPPORT EQUIPMENT TECHNICIAN MECHANICAL COURSE (BASIC) (Cont'd)

Diesel engine nozzle and injector test stand
Engine distributor tester
Vibro-centric method B & D kit
Halide refrigerant leak detector
Type two degreaser
Fuel test set P/N J9787
Transmission lift
Air operated lubricating unit
Cut-away gasoline engine trainer (6)
Water pump
Crankshaft
Magneto
Generator
Fuel pump demonstrator
Complete air-condition/refrigeration system (Scott)
16mm projector
Overhead projector
Screens
Auto cranking motor demonstrator
Magneto
Cut-away GM diesel fuel-oil injector mockup
Cut-away coil demonstrator
Fuel pump
Valve lifter and spring
Oil pump relief valve
Torque converter
Cut-away internal combustion engine
Cut-away air compressor
Galvanometer
Multimeter
Battery charger
Hydraulic crane
Chrysler engine
GM diesel engine
International diesel engine
Halo. leak detector
High vacuum pump
Engine stand
SUN engine diagnosis tester
Fuel pump tester
Vacuum leakage tester
Vacuum pressure tester
Manifold refrigeration tester
Radiator cooling system tester
6 cylinder White engine

AVIATION GROUND SUPPORT EQUIPMENT TECHNICIAN MECHANICAL COURSE (BASIC)   (Cont'd)

Electronic tester
Tach-dwell tester
Voltage tester
Diagnostic kit
Air compressor
Sleeve puller

Career Field: Aviation Trades

Course: AIRCRAFT HANDLING (Basic)

Catalogue No.: C821-2010/L   Course Date: 5/18/70

Course Description:

This course is designed to provide students with a general knowledge of aircraft and the skills necessary to perform basic ground-support duties, as well as survival procedures, routine inspections, preventive maintenance and ground safety precautions.

Comments:

This course covers both land-based and carrier-based aircraft-handling procedures, but there is enough commonality in most such activities to make it applicable to civilian situations.

Course Content:

Blocks		Hours
I	Introduction	22
II	Crash Fire Fighting and Rescue Procedures	68
III	Aircraft Handling	32
	TOTAL	122*

*Note: Extracted from a total of 2.64 hours in the original Navy course.

Support Materials:

1. Instructor materials include lesson guides, a slide/sound instruction guide, quizzes, and tests totaling 259 pages.

2. Student materials include programmed instruction and handouts totaling 241 pages.

3. One color film totaling 27 minutes.
   Two commercial color films totaling 75 minutes.

4. 40 Slides
   67 Transparencies

5. Three Charts

6. Two slide/sound presentations consisting of:
   81 Slides
   Two Cassettes totaling 60 minutes

Equipment:

Sound Attenuating Helmet Head Band
Hoisting Sling T-34
A/C Crash Dolly Wheel
A/C Tow Bar Universal
A/C Chock Adjustable
Hoisting Sling F-4
Hoisting Sling A-6
Crash and Rescue Kit
A/C Chain Tie Downs
Firefighting Foam
Aluminum Firefighting hood
Aluminum firefighting coat
Yellow cotton Flight Deck Jersey
Aluminum Firefighting Trousers
Blue Cotton Flight Deck Jersey
Fireman's safety boots
Flight Deck Goggles
Lightwater AFFF
Firefighting Axe
Potassium Bicarbonate (PKP)
Aluminum Firefighting gloves
Lucite Flight Deck Wands
Cable Cutters
T.2 Cartridges
Ford 1/2 Ton Crash Rescue Truck
Yardlift 15,000 lb. Forklift
NS-50 Crash Crane
Towing Tractor A/C TA-75
A/C Towing Tractor MD-3A
Truck Crash MB-5 (Oshkosh)
A/C spotting SD-1C Dolly

AIRCRAFT HANDLING (Cont'd)

Truck Crash MB-1A (Oshkosh)
Mounted Fire Boss Tractor
Skid Mounted Twinned Agent Unit
A/C T-34 Taxiable
Aircraft Strike F-4
Aircraft Strike A-6
Overhead projector
Motion picture projector (16mm)
Slide projector
Tape player
Projection Screen
A/C Crash Rescue Trainer 6 ft.
MK-1 Bladder CO2
MK-1 Covers Red
MK-1 Covers Blue
MK-1 Covers Yellow
Welder Model T-295
Battery Charger with alternator protraction
Portable rescue saw (gasoline)

Career Field: Aviation Trades

Course: AVIATION MACHINIST (RECIPROCATING) (BASIC)

Catalogue No.: C-601-2012/M   Course Date: 8/3/73

Course Description:

Course covers the principles of operation of reciprocating power plants including their accessories and systems; the ability to identify, use, and care for hand tools; understanding and ability to assist in an engine buildup; under supervision and with assistance, conduct preflight, daily and periodic maintenance inspections; and understand and observe all safety regulations concerning ground operations of aircraft.

Comments:

The Navy requires that students for this course be graduates of the Aviation Fundamentals Course.

Course Content:

Blocks		Hours
I	Introduction	2
II	Power Plant Principles	35
III	Power Plants	37
IV	Ignition	38
V	Fuel Metering	19
VI	Propellers	20
VII	Engine Buildup	39
VIII	Periodic Maintenance Inspections	37
	TOTAL	227

AVIATION MACHINIST (RECIPROCATING) (BASIC) (Cont'd)

Support Materials:

1. Instructor materials include exams, curriculum guides, lesson plans, film guides, etc. totaling 716 pages.
2. Student materials includes handouts, programmed instruction, student guides and work books totaling 485 pages.
3. 43 transparencies
   65 charts
4. Three color films totaling 52 minutes
   Six black and white films totaling 101 minutes

Equipment:

Fuel selector valve
Propeller hoisting sling
Cylinder to crankcase locating screw
Master rod guide plate
Propeller shaft turning tool R-1820-80
Carburetor
Magnetos
Waukesha 28/v/DC 200 amp
A/C cylinder compressor tester
Calendar inspection card stand case
A/C tie down
Oil pressure fixture, disassembly strainer
Ignition timing light
Test set insulation
Borescope assembly
Straddle hoist
Engine stand
Engine "L" stand
Ignition distributor cut-away
Fuel vane pump
Submerged pump
Starter vibrator
Governor assembly
Platform maintenance
Propeller AIRC 1 cutaway
Temperature valve
Engine sling
Quick Engine change kit
Able assembly display board

AVIATION MACHINIST (RECIPROCATING) (BASIC) (Cont'd)

Ignition harness display board
Dome lifting handle
Aural protector
Rocket box screwdrive
Wrench stop lever
Piston ring clamp
Rod protector
Piston position indicator
Cylinder wrench
Exh-pipe pliers
Piston ring puller
Push rod wrench
Wrench cyl hold down
Spanner wrench
Push rod wrench
Dome retaining nut wrench
Propeller wrench retaining nut
Crowfoot carburetor and generator wrench
Tool cycliner hold down lock plate
Socket oil transfer housing
Housing assembly
Chain hoist
Tool installation cylinder
Wrench
Wrench servo piston and dome
Multimeter 630 PL
Overhead projector
Movie projector 16 mm
Polarized disc
Galvanometer
Electromagnetic kit
Aircraft, S2A
Engine, (R820) 10 installed in A/C
Engine, R1820-80 cutaway
Engine, R1820-86
Carburetor display board (cutaway) PT-1306 type
Vids board, 25 pocket acme visible records
Air compressor

Career Field: Aviation Trades

Course: AIRCRAFT STRUCTURAL MECHANIC (BASIC)

Catalogue No.: 603-2010/M Course Date: 7/13/72

Course Description:

This course provides students with the skills necessary to interpret flat layout drawings and simple orthographic projections; locate in maintenance manuals the information necessary to accomplish preventive maintenance and to make structural repairs to aircraft; fabricate sheet metal parts for minor repairs to aircraft structures and skin including access door panels; prepare and seal integral fuel cells; identify, remove, and control corrosion; prepare and paint aircraft surfaces; lay out numerals and letters on aircraft; clean plastic surfaces and perform maintenance on transparent enclosures; perform general maintenance duties; perform aircraft inspections; and assist with the maintenance and rigging of aircraft control surfaces.

Comments:

Prerequisite for this course is Aviation Fundamentals course. This course is to be individualized by August, 1976.

Course Content:

Blocks		Hours
I	Familiarization	3
II	Aircraft Structural Repair	168
III	Nonmetallic Materials and Corrosion Control	64
IV	Airframes and Operational Maintenance	80
	TOTAL	315

AIRCRAFT STRUCTURAL MECHANIC (BASIC) (Cont'd)

Support Materials:

1. Instructor materials total approximately 1,000 pages.

2. Student materials total approximately 1,500 pages.

3. Two black and white films totaling 40 minutes
   Two color films totaling 50 minutes

4. 132 transparencies
   74 posters
   50 charts

Equipment:

Aileron lock
Canopy strut
Exhaust cover
Steering nose bar
24 x 5.50 tire
24 x 5.50 wheel assembly
Tail stand
Safety lock
Right-hand aileron protractor
Elevator protractor
Rudder protractor
Wheel assembly, fusible plug
Inspection case
0-1000 psi high pressure inflator chuck gauge
Hydraulic wing jack
Portable air cylinder
B-4 maintenance platform
Bench mounted grinder
16 gage, 36" foot-operated square shear
90 psi electric air compressor
Reciprocating air compressor
Hose cutoff machine, model S1229
Tire holder and bead breaking P/N LEE1X
Corrosion control kit
Portable dry honing machine
Axle jack
Demountable flange wheel, 9530584
Belt and disc sander
Arbor press
Optical micrometer, P/N 966A1

AIRCRAFT STRUCTURAL MECHANIC (BASIC) (Cont'd)

Portable pneumatic hammer
Fast hitting rivet gun
Pneumatic blind rivets riveter
High-shear rivet kit
Single and double lap flaring and bending tube tool kit
Left-hand aileron protractor
Stencil cutter
Bar folding machine, model #4 (available: Machine & Tool Works [Niagra])
Hand operated bench mounted shear, DI-ACRO No. 3, DI-ACRO MFG. CO.
Disc sander
Gun sealant
Low pressure gun sealant P/N 250-2
Floor mounted drill press
Bench type drill press
Drill sharpener grinder
24" bench mounted brake
Turret type press punch
Throatless shear
52" foot operated square shear
Portable coin dimpler machine
Portable cable tester
Tensiometer indicator
Blind riveter, hand model 23A
Flexible cable swaging tool
Portable pneumatic drill
Pneumatic blind riveter, Cherry model G15
Tire inflating booth
2 gal. binks pressure feed paint tank
Spray paint and dope gun
Overhead projector
16mm sound motion picture projector
Lecturn-type table model galvanometer, device 6E4
35mm slide projector
Spring-loaded C yoke standard coin dimpler, Zephyr Mfg. Co.
4 ft. capacity floor model cor-ice brake, Peck, Stow & Wilcox
Portable pneumatic hammer, single-shot (available: Chicago Pneu.)
Bench mounted 1/4 hp paint mixer, 115/230V, Red Devil Inc., N.J.
Niagra 42" floor mounted shear
Barth 54" floor mounted shear
Niagra 72" floor mounted shear
Standard tool JO-bolt, size 3/16" to 3/8", Loc Fast Inc.
Visual information display boards, Acme Visible Records Inc.

Career Field: Aviation Trades

Course: AIRCRAFT STRUCTURAL HYDRAULICS MECHANIC (BASIC)

Catalogue No.: 602-2017/M Course Date: 9/7/72

Course Description:

This course covers all phases of hydraulic systems found in contemporary aircraft. Students are introduced to the theory and operation of all such systems as well as the proper maintenance and repair procedures appropriate to such systems.

Comments:

A prerequisite to this course is Aviation Fundamentals. The course will be fully individualized by August, 1976. The "hands-on" portion of the present course requires such an extensive equipment list that it would be impractical to teach the "practical" portions in a civilian setting. The modularized version, to be ready in mid-1976, will require much less equipment but will cover the same ground. As a consequence, the equipment list for the present version has been eliminated from this report.

Course Content:

Blocks		Hours
I	Introduction to Hydraulics	22
II	Power Systems	22
III	Landing Gear Units	30
IV	Valves and Actuators	26
V	Maintenance of Hydraulic Systems	95
VI	Operational Maintenance	49
VII	Interpretation of Schematics	2
	TOTAL	246

AIRCRAFT STRUCTURAL HYDRAULICS MECHANIC (BASIC) (Cont'd)

Support Materials:

1. Instructor materials include curriculum outline, course of study, instruction guide, and examinations totaling 1,460 pages.
2. Student materials include study guide, programmed instruction, and handouts totaling 1,340 pages.
3. Two black and white films totaling 73 minutes
   Five color films totaling 131 minutes
4. 480 transparencies
   70 posters
   25 charts

Career Field: Aviation Trades

Course: AVIONICS TECHNICIAN (BASIC)

Catalogue No.:

Course Date: Due for Completion mid-1975

Course Description:

This course provides the basic technical knowledge and skills to perform job entry level avionics maintenance tasks.

Comments:

This course is under development by the AV(A1) School at the Naval Air Technical Training Center at Memphis, Tennessee. The course was designed from Navy Occupational Training Analysis Program data, and is intended to give a practical "Hands On" training program to teach each new technician skills required for further specialized training on these types of equipment.

Course Content:

Blocks		Hours
I	Intermediate electronics	27
II	AM communications system	170
III	FM communications	10
IV	Computer systems	70
V	Airborne search radar systems	141
VI	IFF systems	3
VII	Fire control radar systems	2
VIII	Airborne navigation systems	3
IX	Maintenance activity procedures	58
	TOTAL	484

AVIONICS TECHNICIAN (BASIC) (Cont'd)

Support Materials:

1. Planned materials include curriculum outline, learning supervisors and student guides, as well as 57 different modules containing approximately 200 programmed units and laboratory guides. As the course is still under development, the number of printed pages is not available.
2. Audio and visual aids as alternate teaching media will be developed as needed.

Equipment:

Output meters
Differential voltmeters
Oscilloscopes
R.F. signal generators
Electronic voltmeters
Multimeters
Test sets
Tube testers
Wattmeters
CLR bridge
Signal generators
Spectrum analyzers
Pulse generators
Echo boxes
Ohmmeters
VSWR meters
Microphones
Sweeper/generators
Avionics module repair kits
Headsets
Cable assemblies
Integrated circuit testers
Plug-in modules
Field strength meters
16mm projectors
Wall screens
Kodak carousel slide projectors
Recorder reproducer
Stereo companion
Opaque projector
Logi-tran 4 trainers (computer)
Analog trainers

AVIONICS TECHNICIAN (BASIC) (Cont'd)

Digital computer logic trainers
CAU-I trainers
AM communications trainers
Synchro servo trainers
Airborne search trainers
FM communications trainers
Transistor curve trainers
AM receiver trainers
D.C. power supplies
Frequency measuring systems
Strip and sound projectors
Synchro search producers
Cassette playback unit
Telex headsets
Acme visible display boards
Digital computer trainers
Teletype input/output units

Facilities:
Learning centers with fully equipped laboratories

Career Field: Construction Trades

Course: CONSTRUCTION APPRENTICE (PREP)

Catalogue No.: A-030-0010/GP   Course Date: 10/15/73

Course Description:

This course enables students to: define and use common construction terms; have a sound basic knowledge of construction safety; be able to identify and utilize the tools, equipment, and materials which he would likely be called upon to use as a construction apprentice.

Comments:

The Construction Apprentice School was originated to provide meaningful learning experiences through which a recent graduate of Basic Recruit Training could gain the knowledge and skills necessary to be able to join the Construction forces and function as a helper in construction operations. To accomplish the required training, the Construction Apprentice School was developed at NCTC Gulfport.

Course Content:

Blocks		Hours
I	Orientation	1
II	General Steelworker	19
III	Construction Electrician/Utilitiesman	24
IV	Builder/Engineering Aid	27
V	Construction Mechanic/Equipment Operator	25
	TOTAL	96

Support Materials:

1. Instructor materials include curriculum guide, lesson

guides, and examinations totaling 241 pages.

2. Student materials total 120 pages.

3. 29 black and white films totaling 805 minutes
   1 color film totaling 23 minutes
   5 commercial color films totaling 150 minutes

4. 3 charts

Equipment:

Motion picture projector
Band saw
Chain saw
Circular saw
Concrete kumalong
Jitterbug tamper
Jointer
Lathe
Mortar mixer
Radial arm saw
Rollerbug
6 S mixer
Table saw
Troweling machine
Vibrator
Vibratory screed
Brick trowel
Bull float
Clamps
Edger
Float
Hammers
Hand saws
Jointing tools
Magnesium darbie
Magnesium float
Mason's hammer
Mason's level
Miter box
Paint brushes
Paint rollers
Pointer
Rub block
Scrapers

CONSTRUCTION APPRENTICE (Cont'd)

Shovel
Spray paint rig
Squares
Steel trowels
Wheel barrow
Block
Glue
Lime
Nails
Paint
Sand
Sandpaper
Wood
Drill motors
Megger
1.5 KW lite plant
VOM
Ball peen hammer
Channel locks
Claw hammer
Combination pliers
Diagonal pliers
EMT bender
Fish tapes
Gaff gauge and file
Hickey
Hydraulic bender
Knives
KO punches
Lineman's pliers
Lineman's tool kit
Offset screwdriver
Phillips screwdriver
6" folding rule
Soldering iron
Special purpose hammer
Standard screwdriver
Stripper
Poles
Single conductor #12 wire
Solder
Tape
Two conductor #12 wire
Automotive vehicle
Crawler tractor
5 ton tactical vehicle
Lube skid and rack
Tire demounter

Battery terminal cleaner
Battery cable puller
Bench grinder
Brake bleeder
Caliper
Chain hoist
CM tool kits
Drill press
Feeler gauge
Hydrometer
Jacks
Jack stands
Slings
Spark plug cleaner
Steel rules
Taps and dies
Thread gauge
Timing light
Trouble light
Air filters
Chassis lubricant
Cleaning solvent
Crankcase oil
Fuel
Gas filters
Oil
Oil filters
Rags
Levels
Transits
Bench brush
Chain
Chain pin
Curves
Data book
Drafting instruments
Drawing boards
Erasing shields
Lettering guides
Machete
Philadelphia rod
Plumb rod
Proctor mold and hammer
Range pole
Sand cone
Scales
Sieve set

CONSTRUCTION APPRENTICE (Cont'd)

Sledge hammer
Speedy moisture tester
T-square
Triangles
Data sheets
Erasers
Hubs and stakes
Labor analysis sheets
Marking tape
Masking tape
MTO forms
Nails
Paper
Pencils
Tacks
Time cards
Arc welding rigs
Brake
Crimping and beading machine
Oxyacetylene/Oxymapp cutting and welding rigs
Shear
Slip roll former
Welding rigs
Adjustable wrench
Blacksmith kit
Commander fid
Electric arc welding kit
Erection kit
Fid
Gas welding and cutting kit
Gauges
Marlin spike
Rigging screw
Rivet guns
Sheetmetal kit
Slag hammer
Snips
Soldering equipment
Wire brush
Wire rope cutter
Wire rope splicing kit
1/4" plate steel
Acetylene
Brazing rod
Fiber line
Flux
MAPP

CONSTRUCTION APPRENTICE (Cont'd)

Oxygen
Re bar
Rivets
Seizing wire
Sheetmetal
Solder
Tie wire
Twine
Welding rod
Wire rope
ND-25
Oilers
Pipe machine
Caulking iron
Chisel
Cutters
Face shield
Files
Gloves
Hammers
Joint runner
Ladle
Lead pipe
Pipe benches
Pipe wrenches
Plumbers furnace
Rachet stock
Reamers
Rules
Thermometer
Vises
Wind break
Yarning iron
CISP
Calcium hypochlorite
Cutting oil
Diatomite
Freon 12
Freon 22
Lead
MAPP
Oakum
Orthotolodine
Pipe dope

Cutaways
Four cycle diesel engine

CONSTRUCTION APPRENTICE (Cont'd)

Gate valve
Globe valve
Leaded CISP joint
Six cylinder gasoline engine
Two cycle diesel engine

Display Boards
Common CISP fittings
Concrete tools
Riber line
Hardware (BU)
Interior wiring materials
Rebar
Telephone subset installation
Wire rope
Yarning a joint

Career Field: Construction Trades

Course: ENGINEERING AID (BASIC)

Catalogue No.: A-412-0010/GP Course Date: 1/6/74

Course Description:

This course covers: mathematics including logarithms, geometry and trigonometry; materials testing of soils, asphalt and concrete; basic drafting; blueprint reading; basic surveying including office computations, chaining, and use of transit, level and compass; topographic surveying and building layout.

Comments:

Prerequisite for this course is the Construction Apprentice course.

Course Content:

Blocks		Hours
I	Introduction	7
II	Mathematics	26
III	Basic drafting	64
IV	Construction drawing	61
V	Basic surveying	30
VI	Surveying instruments	37
VII	Topographic surveys	34
VIII	Engineering surveys	33
IX	Materials testing	44
	TOTAL	336

ENGINEERING AID (BASIC) (Cont'd)

Support Materials:

1. Instructor materials total 708 pages.
2. Student materials include job sheets, work sheets, information sheets, and other original material totaling 180 pages.
3. Four black and white films totaling 66 minutes.
   Three commercial black and white films totaling 56 minutes.
4. 12 commercial 35mm slides
   107 transparencies
   16 charts

Equipment:

16mm motion picture projector
Overhead projector
Opaque projector
Slide projector
Projector screen
Flip chart easel
Fine and coarse aggregate
Ethyl alcohol
30-inch burlap asphalt materials
Cleaning cloth
Capping compound
Data sheets
Distilled water
Buff drawing paper
Flagging
French curve
Hubs and stakes
India ink
Keel (lumber crayon)
Matches
Mineral filler
Notebooks
Machine oil
Reagents
Drawing paper
Filter rotex paper
Sand paper
Tracing paper

ENGINEERING AID (BASIC) (Cont'd)

Lead pencils, 4H, 6H
Grease pencils
Portland cement
Ottawa sand
Sandpaper
Fine-grain soil
Damp soil samples
Solvent
Steelwool
Wrapping string
Tacks
Scotch tape
Tracing paper
Trainee field book
Adjusting pins
Ames lettering guide
Auger
Dusting brush
Sieve brush (wire and hair)
Bull point
Moisture can
Calculator
Chaining pins
Chain grips
Engineering chain
Clipboard (9" x 15 1/2")
Foresteer compass
Surveyor's compass
Cold chisel
San density cone with plate
Slump cone set
Diazit space saver printer developer
Diazit Pump-It ammonia pump
Proportional dividers
Drafting set
Drawing tables (double metal)
Erasing shield
French curve
White flagging
Red flagging
Bastard file, 10"
Hatchet
Mold proctor hammer
8 lb. sledge hammer
2 1/2 lb. hammer
12 lb. sledge hammer
Hub tacks

ENGINEERING AID (BASIC) (Cont'd)

Dumpy level with tripod
Wye level with tripod
Self-leveling level with tripod
Hand locke level
Hand abney level
Level rod
Leroy lettering set
Machete
Mold proctor (1/30 cu. ft.)
Electric drying oven
Pointer pencil
360-degree protractor
Plumb bob
Plumb bob sheath
Polar planimeter
Philadelphia rod with target
Range pole
Reagent, speedy moisture tester lb/cn
Folding ruler
Speedy moisture tester
Engineer scale
Architect's scale
Metric drafting scale
Spring scale (100 lb. capacity)
Torsion balance scale (200 gr.)
Triple beam balance scale
Sieves, 200
Sieves, 100
Sieves, 60
Sieves, 40
Sieves, 10
Sieves, 4
Sieves, 1/4"
Sieves, 3/4"
Sieves, 1"
Sieves, 1 1/2"
Sieves, 2"
Safety vest
4" spatula
Sample splitter
Log log slide rule
Stadia board
Stadia slide rule
Stake bag
Cloth tape, 100 ft.
Steel tape, 200 ft.
Steel tape, 300 ft.

ENGINEERING AID (BASIC) (Cont'd)

Transit with tripod
Plastic drafting template set
36" T-square
12" 30-60 degree triangle
6" 30-60 degree triangle
12" 45 degree triangle
Tension handle
Tape thermometer
Draftsman reservoir pen set
Volumetric flasks
Liquid limit device with grooving tool
Screwdriver
1,000 ml. graduated cylinder
Mixing pan
Penetrometer
Large spoon
Straight edge
5 1/2 lb. tamper
10 lbs. tamper
8" lineman's pliers
CBR mold with cutting edge
12 oz. hammer
100 lbs. Ottawa sand
Concrete molds
Pycnometer
Dunagan apparatus
Water absorption mold with tamping rod
2000 gr. triple beam scale
Concrete tester
Concrete cylinder safety guard
Tapered cement pan
Vertical cylinder capper set
Sieve pan
Sieve cover with ring handle
Sieve shaker
Plastic limit set
Chapman flask
500 ml. flask
Plastic funnel
Electric hotplate
Mortar and pestle
Desiccator
Evaporating dish
Preparation knife
Sample bags
Sample cans, 1 qt.

Career Field: Construction Trades

Course: ENGINEERING AID CLASS (ADVANCED)

Catalogue No.: A-412-0015/GP Course Date: 1/10/72

Course Description:

This course provides a review of mathematics, including operation of the slide rule, logarithms, and plane trigonometry; construction administration, including foremanship, PRCP, correspondence, and planning amd estimating; construction surveying, including road design and surveys and air field surveys; triangulation and field astronomy; map projections; advanced base planning; quality control testing of construction materials, including soils, concrete, and asphalt.

Comments:

Prerequisite for this course is Engineering Aid (Basic).

Course Content:

Blocks		Hours
I	Indoctrination	3
II	Administration	95
III	Review of mathematics	15
IV	Construction surveys	50
V	Triangulation and field astronomy	61
VI	Map projections	22
VII	Soils testing	51
VIII	Concrete testing	37
IX	Bituminous material testing	43
X	Summary and evaluation	10
	TOTAL	575

ENGINEERING AID CLASS (ADVANCED)   (Cont'd)

Support Materials:

1. Instructor materials total 600 pages.

2. Student materials total 200 pages.

3. 26 black and white films totaling 477 minutes.
   3 commercial color films totaling 90 minutes.

4. 9 Transparencies
   19 Charts
   2 Models

Equipment:

Administrative analysis
Building materials
  Brick
  Concrete block
  Reinforcing steel
Air meter
Architect scale
Architect template, 1/4"
200 gram capacity triple beam balance
2,000 gram capacity triple beam balance
Battery filler
Beam compass
Concrete beam mold
Concrete beam tester
6 qt. bucket
Bunsen burner
Programmable calculator
Capping rig
Circle template
Cleveland open cut
Concrete compression testing machine
Constant temperature bath sink
Sample container
Core barrel sampler
Concrete cylinders
Graduated 100cc glass cylinder
Graduated 1,000ml glass cylinder
Sediment cylinder
Shield cylinder
Evaporating dishes
Dublin Rotarex extractor

ENGINEERING AID CLASS (ADVANCED) (Cont'd)

Erasing shield
Bituminous field identification kit
Paper gasket type filter ring
Chapman's flask
Volumetric flask
French curves
Funnel
Complete standard set drawing instruments
Glass beaker
Ground glass
Grooving tool
Sledge hammer
Electric hot plate
Hydrometer
Hydrometer flask
Engineer's Level, Dumpy or Wye, complete with tripod
Level rod
Liquid limit device
Marshall stability equipment
  Asphalt compaction hammer
  Compaction mold
  Breaking head
  Flow meter
  Loading frame
1/10 cu. ft. measure
Compound melting pot
Moisture cans
Mortar and pestle
Outside calipers
Electric oven
Base pan
Mixing pan
Penetrometer
Planimeter
Plumb bob
Protractor
Short wave radio receiver
12" steel ruler
50 lb. capacity scales
Scoops
Screwdriver
Seismic timer (milli- and micro-second type) with accessories
Sieves
Slide rules
Slump cone and rod
Sodium metaphosphate (trade name "Calgon")
Soil analysis kit

ENGINEERING AID CLASS (ADVANCED) (Cont'd)

Soil concrete compression testing set
Spatula
Mixing spoon
Soil dispersion stirrer with cup
Stop watch
T-square
Engineer's steel tape
Invar tape
Theodolite, complete with tripod
General laboratory thermometer
Crucible tongs
Laboratory tongs
Transit, complete with tripod
45-degree triangle, 6"
30-60 degree triangle, 6"
Viscometer
Watch
Coarse aggregate
Fine aggregate
Concrete air entraining agent
Rubber laboratory apron
Varnish brush
Cappling compound
Type II cement
Compression cylinder mold
Data sheets
Distilled water
Field books
Field indentification of soils, field help
Flashlight
Flexural mold
Hot gloves
Gravel
Asphalt hot mix material
Hydraulic fluid
Masking tape
Mineral filler
Minus 200 fine grain soil
Grease pencil
Sand
Sodium sulfate, solution and powder
Fine grain soil
Soil samples
Solvent
Standard color solution
Stakes
Tags
Unknown soil samples
Various bituminous grades and composition

Career Field: Construction Trades

Course: BUILDER (BASIC)

Catalogue No.: A-710-0010/PH   Course Date: 12/15/74

Course Description:

This course trains students within specific standards to: use builder's tools, equipment, and materials; read simple construction drawings in manufacturing woodworking products; erect light frame structures, concrete masonry unit structures, pre-engineered buildings and heavy timber bridges; install and finish drywall; prepare and install door jamb with casing and baseboard; install composition floor tile and ceramic tile; lay out and apply materials for built-up roofing; and apply stucco and paint; mix, transport, place and finish concrete.

Comments:

It should be noted that of the total course hours, 221 hours (about 80%) are devoted to performance-oriented instruction; therefore, large and costly equipment is used to teach this course. It is therefore suggested that contact be made with local city engineering or commercial builders for possible use of their equipment.

Course Content:

Blocks		Hours
I	Introduction, woodworking and millworking, light frame structures, interior finishing, roofing painting	129
II	Masonry, concrete exterior finishing, ceramic tile, advanced base structures, practical projects	145
	TOTAL	274

Support Materials:

1. Instructor materials include a curriculum outline,

lesson plan, examinations and checksheets totaling 300 pages.

2. Student materials include study guides and job sheets totaling 300 pages. One standard Navy text and eight commercially available texts are also utilized.

3. Ten black and white films totaling 233 minutes. Ten commercial black and white films totaling 62 minutes.

4. Thirty-two transparencies.
   Nine charts.

Equipment:

Trailer mounted air compressor, capacity 210 CFM, 100 PSI
Floor model drill press, 17n, 3/4 HP, 1725 RPM
Rotary concrete finishing machine, 36n trowel ring, gasoline engine powered, 4 combination blades
Steel stand 8n jointer, 66n overall bed length
2-wheel-mounted asphalt kettle, kerosene or diesel fuel - 20 gal. tank mixer, concrete 16-S, 4-wheel mounted, non-tilting drum, side discharge, gasoline powered engine
Mixer, mortar, 6-cubic feet, tilting drum, manually charged, gasoline engine powered, 2-wheel-mounted
12n floor model disc sander
Saw, band, tilting table 30n x 36n, tilt to right 45°
Masonry saw, 14n wet cutting head, 3 HP
Radial arm saw, 16n blade, steel table, wood top, floor model
Table saw, tilt arbor, table 38n x 48n, 12n blade, floor model
Carpenter tool kit F/4 men
Mason tool kit F/4 men
20 x 48 RF erection tool kit
Drywall installation tool kit
Plastering tool kit
Ceramic tile kit
Bridge and dock builder kit
Roofing broom
Flat paint brushes (2n, 3n, 4n)
Oval paint brush (3/4n)
Dowel gauge set
Mason's hoe
1 cubic foot measuring box

BUILDER (BASIC)   (Cont'd)

Miter box with saw
Roofing mop
Mortar box
9in paint roller kit
9in paint roller replacement
60in 2 men cross-cut saw
Sq. pt. D handl shovel
12 ft. alum alloy stepladder
Natural sharpening stone
12in woodworker's vise
Woodworker's bench
Concrete column forms
Low-wall concrete forms
Concrete wall and overhead forms
Butt-gained hinges
Platform frame building
Roof-types
Cardboard column form
Gable-end stud
Lumber samples
Tile samples
Wall board samples
Tile adhesive
Course and fine aggregate
Roofing asphalt
Building paper
Cement
Hand cleaner
Composion tile
Concrete block
Concrete form accessories
Curing compound
Dry wall
Cement and tape dry wall
Felt paper
Fiber line
Glue
Hardware
Hydrated lime
Lumber
Masonite
Nails
Form oil
Enamel paint
Latex paint
Oil paint
Remover paint
Pencils

BUILDER (BASIC) (Cont'd)

Plywood
Pre-cut sections of a trestle-bent bridge
Pre-engineered building (20' x 48')
Rags
Felt roofing
Masonry sand
Screws
Liquid soap
Oil stain
Steel wool
Wire mesh stucco
Thinner
Timber
Varnish
Metal lath
Anneal wire
16mm motion picture projector
Motion picture screen
Overhead projector

Career Field: Construction Trades

Course: BUILDERS/MASONRY (ADVANCED)

Catalogue No.: A-710-0017/GP   Course Date: 1/15/73

Course Description:

This course covers technical knowledge and skills essential to effective performance as masonry technicians with Construction Battalions. Essentially this performance shall consist of effective use of tools, equipment and methods used in masonry construction, mixing mortar, laying brick, concrete block, structural clay tile, glass brick, stone masonry, plaster and stucco, ceramic tile, and planning and estimating.

Comments:

The Navy requires that students be previously trained as a "Builder (Basic)".

Course Content:

Blocks		Hours
I	Introduction	12
II	Planning and estimating	12
III	Mortar	2
IV	Brick	36
V	Concrete block	5
VI	Structural clay tile masonry	10
VII	Stone masonry	10
VIII	Plaster and stucco	38
IX	Ceramic tile	18
X	Summary and examination	4
	TOTAL	147

Support Materials:

1. Instructor materials include course outlines, instruction sheets, examinations, etc. totaling 406 pages.
2. Student materials include information sheets, hand-outs, charts, etc. totaling 67 pages.
3. One black and white film totaling 10 minutes
   Three commercial black and white films totaling 41 minutes

Equipment:

Lime mixer
Mortar mixer, 6 cu. ft.
Plaster mortar mixer
Carpenters tool kit, No. 0019
Mobile Construction Battalion Table of Allowances
Angle dividers
Architect's scale
Beating blocks
Brick hammer
Brick set/bolster
Cutting tools
Face hammer
Framing square
Hawk
Jointing tools
Line pins
Mason's hammer
Mason's level
Mortar board
Mortar box
Mortar hoe
Nylon line
Rubbing stones
Scaffolding and staging
Scratcher
Scrub brush
Shovel
Trammel bar
Water brush
Wheelbarrow, 3 cu. ft.
Chalk line
Brushes

BUILDERS/MASONRY (Cont'd)

Browning tool
Finishing tool
Angle float
Carpet float
Cork float
Sponge rubber float
Wood float
Framing square
Hawk
Half hatchet
Lathing hatchet
Joint rods
Level
Ornamental small tools
  Leaf and Square
  Trowel and Square
Paddle
Plumb bob
Rule, folding 6'
Hand saw
Keyhole saw
Scratcher/scarifier
Tin snips
Angle trowel
Margin trowel
Pipe trowel
Pointing trowel
Special trowel
Common bricks
Fire bricks
Caulking compound
Keene's cement
Portland cement
Ceramic mosaic tile
Ceramic wall tile
Flashing
Lime
Lumber
Reinforcing metal
Metal ties
Material estimate, re-cap sheet
Material estimate, work sheet
Plaster of paris
Plywood
Premolded expansion joints
Reinforcing steel
Sand

BUILDERS/MASONRY (Cont'd)

Stone (rough)
Tie wire
Structural tile, 4" and 8"
Waterproof membrane
Movie projector
Movie screen

Career Field: Construction Trades

Course: BUILDER/HEAVY CONSTRUCTION TECHNICIAN (ADVANCED)

Catalogue No.: A-710-0018/GP Course Date: 1/15/73

Course Description:

Course provides advanced training in crew supervision, planning and erection techniques for timber construction and pile driving. Advanced training in skills related to construction of timber structures, cofferdams, seawalls, jetties, and breakwaters. Pile driving operation techniques utilizing all types of piles and pile driving rigs; instructions in preparation of simple designs, sketches, and specifications, material and man-day estimates.

Comments:

Navy requires that students have previous training as a "Builder (Basic)".

Course Content:

Blocks		Hours
I	Indoctrination	7
II	Heavy construction tools	4
III	Piles and pile driving methods	17
IV	Waterfront structures	28
V	Trestle construction	27
VI	Heavy construction planning and estimating	30
VII	Lumbering and sawmill operation	33
VIII	Summation	10
	TOTAL	156

Support Materials:

1. Instructor materials include curriculum guides, lesson plans, and examinations totaling 283 pages.

2. Student materials include information sheets, work sheets, charts, etc. totaling 200 pages.

3. Three color films totaling 57 minutes
   Six black and white films totaling [illegible] minutes
   44 transparencies

Equipment:

Movie projector
Movie screen
Overhead projector
Student data card
Drawing pencils
Student folder
Gloves
Logs to be produced locally
Lumber
  (a) concrete forms for pile
  (b) raft
  (c) Templates (pile)
Pier timber bridge 24 ft. roadway, 21 foot span assembly
  No. 1073, P-103
Graph paper
Note paper
Pencils
Pier timber inboard 40 x 13, assembly No. 5262, P-103
Piles, wood
Rope, manilla 3 inch
Straight edges
Material take-off recap sheet
Material take-off work sheet
Superstructure timber bridge 24' roadway span, Assembly
  No. 1072, P-103
Templates, circle
Ties, 8 x 8 creosote timbers (train track)
Compressor all 600 CFM
Diesel hammer
Mobile crane rigged with 65'0" standard loads
Pile extractors
Nail hammer, pneumatic (20d-60d) in assembly 7004

BUILDER/HEAVY CONSTRUCTION TECHNICIAN (Cont'd)

Single acting air or steam hammer
Safety helmets
Air hose, 3/4 I.D. with fittings
Air hose, 1 1/2 I.D. with couplings
Pile driving leads and adapters
Mighty mite sawmill, Model G-812H
Circular saw, pneumatic
Slings, wire rope assorted lengths
Chain saw, gasoline, 24 inches
Chain saw, gasoline, 36 inches
Radial arm saw
Skill saw
Table saw
Double bit ax
Timber carrier
Chain or cable
Straight claw hammer, 16 oz.
Crosscut hand saw, 8 points
Cant hooks
Bridge and dock builder tool kit, Assembly 7004, ABFC
  P-103
Level, 4'
Chalk line with chalk
Peavy or cant hooks
Skid tongs
Sledge hammer
Square, combination
Square, framing
Tape, 8'
Wedges
Wrenches, adjustable jaw

Career Field: Construction Trades

Course: ASPHALT PAVING AND PLANT OPERATION (SPECIAL)

Catalogue No.: A-730-0017/GP Course Date: 1/15/74

Course Description:

Covers disassembly, erection, and operation of a batch type asphalt plant; design of asphalt mix; operation of asphalt distributors, asphalt finishers, rollers, power brooms, and hand tools in the preparation and laying of asphalt mats, and repair of existing asphalt roadways.

Comments:

Navy requires that students be previously trained as an Equipment Operator (Basic).

Course Content:

Blocks		Hours
I	Indoctrination	8
II	Indoctrination to the plant	2
III	Plant disassembly	35
IV	Plant erection	31
V	Asphalt construction materials	5
VI	Designing hot asphalt mix	24
VII	Production equipment	36
VIII	Placement equipment	21
IX	Protective coatings	7
X	Pavement failure and repair	7
XI	Producing and laying asphalt	18
XII	Asphalt plant site selection and	3

scheduling for asphalt paving jobs

XIII Summation and final examination 3

TOTAL 200

Support Materials:

1. Instructor materials include 176 pages of texts, instruction guides, and examinations.
2. Student materials include 376 pages of texts, job forms and information sheets.
3. Two color films totaling 37 minutes
   Ten color commercial films totaling 219 minutes
   60 slides
   One chart

Equipment:

Black-Topper Computator (slide rule)
Asphalt Distributor, ETNYRE Model TUC
Asphalt finisher, Barber-Green Model SA-35
B-L-H 4000 Asphalt Plant
Dump Trucks
Forklift, 6000 pound rough terrain
Front end loader
Mobile Crane with hook and clamshell
Pneumatic Tired Roller
Power Broom
Tandem Roller
Truck tractor, commercial type
Allen set screw wrench set
All thread bar 1/4" x 18"
All thread bar 1/2" x 18"
Asphalt lutes
Asphalt rakes
Mailing bags
Block and tackle (3/4" sheave)
Canvas tool bucket
Carpenters level, 4 foot
Chalkboard
Cribbing for 28 ton load 36 inches high

ASPHALT PAVING AND PLANT OPERATION (Cont'd)

Disel drum
Drying oven
Extension ladder, 40'
Flame simulator 121708 (Honeywell)
Grease Guns with flexible hose
Hand shovels, round point
Hand shovels, square point
Manilla lines, 1/2" x 30' (5 each)
Manilla line, 3/4" x 200'
Manilla line, 1" x 12'
Marlin spikes
Micro Ammeter W-136A (Honeywell)
Pails, 3 gals.
Picks
Pipe wrenches, 18"
Pipe wrenches, 24"
Pressure gage, 5000 pounds
Pry bars, 5 foot
Rulers, 12"
Gasoline safety cans
Sample pans
Scale (gram)
Shackles, 1"
Shaker (sieve)
Sieve brushes
Sieves (set)
Sledge hammers, 12 pound
Slings, 3/4" cable, 10 foot
Slings, 3/4" cable, 20 foot
Splitter, soil sample
Spray can, 3 gal., hand pump
Staging materials, 2" x 12" x 14"
Step ladders, 12'
Street brooms
Test panel FSP 1535 (Honeywell)
Timber, 3" x 12" and 16'
Electricians tool kit
Mechanics tool kits
DD-1206 Sieve Analysis data form
DD-1207 Grain size distribution graph/aggregate grading chart
DD-1217 Bituminous mix design/aggregate blending form
Aggregate
Asphalt cement
Diesel fuel
Graph paper
RC-1 cutback asphalt

Sand
Tar and asphalt remover
Pencils
Movie projector
Movie screen
Slide projector

Career Field: Construction Trades

Course: BUILDER/CONCRETE (SPECIAL)

Catalogue No.: A-730-0020/GP Course Date: 1/15/73

Course Description:

Course provides advanced instruction in concrete construction including formwork, reinforcement, placement methods, related tool and equipment plus storage and handling of related materials; technical instruction in the layout and setup of concrete batch plants, block plants and precast yard operations; prepare simple designs, sketches, and specifications, estimate material and manpower requirements; supervise and train crews.

Comments:

The Navy requires that students be previously trained as a "Builder (basic)".

Course Content:

Blocks		Hours
I	Introduction	4
II	Applied Mathematics	5
III	Plans and specifications	21
IV	Ingredients of concrete	10
V	Design and control of concrete mix	36
VI	Precast concrete	19
VII	Concrete forms	15
VIII	Rebar	3
IX	Joints	6
X	The batch plant and transporting, placing, finishing and curing concrete	21

BUILDER/CONCRETE (Cont'd)

XI	Decorative concrete	3
XII	Road and airfield paving	6
XIII	Concrete block and pipe plants	19
XIV	Gunite	7
XV	Estimating	19
XVI	Summation	22
	TOTAL	216

Support Materials:

1. Instructor materials include instruction sheets, course outlines, and examinations totaling 480 pages.
2. Student materials include information sheets, handouts, charts, etc. totaling 260 pages.
3. One color film totaling 21 minutes
   Three commercial color films totaling 67 minutes
   30 transparencies
   One chart

Equipment:

Movie projector
Movie screen
Overhead projector
Air content test apparatus
Buggy
Chute
Concrete beam breaker, third point loading
Concrete block plant, Kent model 1
Concrete mixer truck
Concrete mixing equipment batch plant
Concrete spreader
Concrete test apparatus, Dungun
Form liners
Guide lines
Gunite machine with associated equipment

Measure, metal cylinder, various sizes
Mobile crane
Cone mold, water absorption
Slump cone mold
Mold 6" x 6" x 21"
Electric oven
Color plate
Proving ring 10,000 lbs.
Pulleys
Aggregate gradation screens, 3/8" to 3"
Shackles
Aggregate gradation sieves, Nos. 4, 8, 16, 30, 50, 100 and 200
Slings
Spreader bars
Standard drafting equipment and materials
Wheelbarrow
Graduated bottles, 32 and 12 oz.
Wire brush
Bucket, 14 qt.
Carpenter's tool kit, No. 19
Graduated cylinder, 100cc
Darby
Edger
Electric fan
Bull float
Hand wood float
Lineman's gloves
Jointer or groover
Bake pan
Tamping rod, steel, flathead
Tamping rod, 24" x 5/8" bullet nosed
Steel rule 24"
Scale, 2 kg.
Kitchen scoop
Square point shovel
Spatula, 4"
Straightedge or strikeoff rod
Hand tamper
Brick trowel
Power and hand trowels
Various sampling containers
Mechanical vibrator
Tannic acid
Bond breaking agents
Coarse and fine aggregate
Burlap

BUILDER/CONCRETE (Cont'd)

- Portland cement
- Coloring agents, stains, and pigments
- Concrete curing materials
- Form liners
- Labor and plant analysis sheet
- Lumber
  - AC exterior plywood, 3/4" x 4" x 3"
  - Fir, 2" x 4" x 16"
  - Fir, 2" x 6' and 2" x 8"
- Common nails, 6d and 16d
- Duplex nails, 16d
- Pickup inserts
- Plastic membrance
- Sand
- Sodium hydroxide
- Trainee registration data card
- Waterproof paper

Career Field: Construction Trades

Course: BUILDER/MILLWORKER (SPECIAL)

Catalogue No.: A-712-0011/D Course Date: 1/15/73

Course Description:

Provides advanced instruction in the fabrication and finishing of wooden doors, windows, cabinets, furniture, trim, stairway members and related items employing various types of woodworking machinery. Emphasis will be placed on both singular and mass production techniques.

Comments:

Navy requires that students be previously trained as a "Builder (Basic)".

Course Content:

Blocks		Hours
I	Indoctrination	8
II	Shop layout	7
III	Care and operation of shop machinery	26
IV	Planning and estimating	8
V	Furniture and cabinet construction	126
VI	Door, window, stairway, and trim fabrication	93
VII	Final examination	7
	TOTAL	275

Support Materials:

1. Instructor materials include curriculum guides, lesson plans, and examinations totaling 145 pages.

BUILDER/MILLWORKER (Cont'd)

2. Student materials include information sheets, charts, etc. totaling 70 pages.

3. 20 black and white films totaling 323 minutes
   12 charts

Equipment:

Movie projector
Movie screen
Band saw
Belt sander (4 1/2" x 27")
Jointer, 6" deluxe long bed
Lathe, wood standard duty
Mortiser, hollow chisel
Paint spray unit, 2 gun, 10 gal. tank with spray gun extension and air/fluid lines
Planer, 18" x 6", single surfacer
Radial arm saw, 12"
Wood shaper, heavy duty
Spray booth, water wash
Table saw, 10" tilting arbor
Tenoner, single end
Plug cutters
Dado set
Shaper cutters
Cope cutters
Shaper jig sliding
Cutter head
Blank knives
Door lip cutter
Collars, set
Table inserts
Cutter, standard set
Bead and cove cutter set
Wood turning tools
Dovetail router bits
Wood turning duplicator
Complete set of hollow chisels
Back saw
Calipers (outside)
Combination square
Compass
Cross cut saw
Dividers
Folding rule 6'
Framing square

BUILDER/MILLWORKER (Cont'd)

- Hammer
- Jigs
- Marking gauge
- Mallet
- Miter box
- Nail set
- Paint brushes
- Paint rollers
- Protractor
- Putty knives
- Router
- Scale
- Sliding "T" bevel
- Trysquare
- T Square
- Triangles
- Wood chisels (lathe set)
- Wood chisels (1/4" - 1")
- Wood clamps
- Lumber (clear shop pine)
  - 1 1/4" x 12" x 8'
  - 1 1/4" x 6" x 8'
  - 1 1/4" x 4" x 8'
  - 1" x 12" x 10'
  - 1" x 6" x 8'
  - 1" x 3" x 8'
  - 2" x 2" x 8'
  - 2" x 4" x 8'
  - 2" x 6" x 8'
  - 4" x 4" x 8'
- Lumber (hard wood)
  - 1" x 12" x 10' Oak
  - 1 1/4" x 12" x 10' Maple
  - 1 1/4" x 6" x 8' Maple
  - 1 1/4" x 10" x 8' Maple
  - 2" x 12" x 8' Maple
  - 1" x 12" x 8' Maple
  - 1" x 8" x 8' Basswood
  - 3" x 12" x 8' Maple
  - 2" x 6" x 8' Douglas Fir
  - 2" x 4" x 8' Douglas Fir
- Plywood
  - 3/16" x 4' x 8'
  - 3/8" x 4' x 8'
  - 7/16" x 4' x 8'
  - 1/2" x 4' x 8'

BUILDER/MILLWORKER (Cont'd)

- 9/16" x 4' x 8'
- 3/4" x 4' x 8'
- Formica (fruit wood)
  - 1/16" x 4' x 8'
- Screws (flat head)
  - #6 x 1 1/2"
  - #6 x 2"
  - #8 x 1 1/2"
  - #8 x 2"
- Nails
- Corrugated Fasteners
- Glues
  - Animal
  - Blood Albumin
  - Sasein
  - Contact cement
  - Epoxy resin
  - Phenolic resin
  - Urea resin
  - Vegetable
- Lacquers
- Paints, oil and enamel
- Sand paper
- Steel wool
- Thinners, lacquer and paint
- Wood filler
- Wood putty
- Wood stains
- Varnishes

Career Field: Construction Trades

Course: BUILDER/TOOL AND EQUIPMENT TECHNICIAN (SPECIAL)

Catalogue No.: A-T12-0010/GP Course Date: 1/15/73

Course Description:

This course provides technical training in the installation, repair and maintenance of carpenter shop equipment, blade reconditioning equipment, portable power and hand tools. Also provides instruction in the procedures for establishing preventive schedules, set-up and maintenance procedures, and operating procedures for construction tool rooms.

Course Content:

Blocks		Hours
I	Introduction	6
II	Preventive Maintenance	4
III	Shop Sharpening Equipment	76
IV	Splicing of Belts and Blades	10
V	Non-Powered Hand Tools	14
VI	Powered Hand Tools	66
VII	Mechanics of Carpenter Shop Machinery	131
VIII	Transportable Sawmill	40
IX	Course Review and Final Examination	6
	TOTAL	353

Support Materials:

1. Instructor materials total 400 pages.
2. Student materials total 30 pages.

3. Five black and white films totaling 84 minutes
   Two commercial black and white films totaling 50 minutes

4. 70 transparencies

Equipment:

Heavy duty air hammer, model 2Z269; W.W. Grainger, Inc.
Two-man auger
Automatic filers, models 200 and 387 with accessories, Foley Mfg. Co.
Automatic retoother, model 201 with accessories, Foley Mfg. Co.
Automatic setter, model 52 with accessories, Foley Mfg. Co.
Band saw
Belt lacing machine
Belt punch
Blow torch
Pneumatic chain saw
Pneumatic circular saw, Ingersoll-Rand
Clay digger; Thor Tool Co.
Compacting tools
Concrete troweling machine
Pneumatic drill; Ingersoll-Rand
Drill press
Electric band saw welder
Electric bench grinder
Electric block plane
Electric drill
Electric grinder
Electric jack plane
Electric reciprocating saw
Electric router
Electric sabre saw
Electric silver brazer
Pneumatic grinder
Grinders, models 314 and 36601, with accessories, Foley Mfg. Co.
Pneumatic impact wrench
Jig saw
Jointer
Lathe
Plumber's and glue melting pot
Mortiser
20-60 penny nail driver, model 2Z128; W.W. Grainger, Inc.

BUILDER/TOOL AND EQUIPMENT TECHNICIAN (Cont'd)

- Round nailer, Duo-Fast
- Paving breaker, model 25; Thor Tool Co.
- Powder actuated hand tools
- High velocity
  - Ramset, Duo-Jobmaster, model 122 MD
  - Remington, Power-Mate, model 455, K2
  - Remington, Mighty-Mite, model 456
- Low velocity
  - Remington, Ejector Stud Driver, model 462, K11E
  - Remington, Pin-Boy, model 66
  - Ramset, Pow-R-Set, models 4130 and 4160
  - Ramset, model 6200
- Radial arm saw
- Router bit/tool grinder, model 37401 with accessories, Foley Mfg. Co.
- Belt and disc sander
- Pneumatic sander
- Spindle sander
- Chain saw
- Transportable Mighty-Mite sawmill; International Enterprises
- Portable cutoff saw
- Shaper
- Sheet driver; Thor Tool Co.
- Single surfacer
- Slag breaker, model 2513; Thor Tool Co.
- Steel drill; Ingersoll-Rand
- Table saw
- Tenoner
- Vibrator
- Vibratory screed

Tools

- Leather belt awl
- Bearing pullers
- Bench vise
- Carriers for retoother and filer
- "C" type clamps
- Cleaning brushes
- Grinder dressing tool
- Ear protective devices
- Set screw extractor
- Files -- flat, tapered, slim and extra slim taper
- Glue applicator
- Goggles and/or face shield
- Grinding wheels and bushings
- Grease gun
- Hacksaw

BUILDER/TOOL AND EQUIPMENT TECHNICIAN (Cont'd)

Ballpeen and plastic hammers
Leather knife
Leather strap
Machinist's level
Leather lacing needle
Pliers -- common, single, long nose, and diagonal cutting; various sizes
Ram rod
Rasp
Ratchet bars for retoother and file
Circular and hand saws
Scraper
Screwdrivers -- Phillips, offset; various sizes
Scribe
Sledge, two-lb.
1/4" drive socket set
12" steel rule
Oil stone
Taps and dies
Tin snips
Tool repair kit
Wheel pullers
Wood plane
Wrenches -- adjustable, spanner, open-end, box-end, and combination
Allen wrench, set graduated in 1/32"

Materials

Abrasive cloth, 100-120-180 grit
Band saw blades
Leather belt lacing
Bore cleaning fluid
Bore patches
Cardex
Checklist blanks
Cross-plyed V-belt material
Diesel fuel
Fasteners, metal belt clamps, both V-belt and flat belt types
Gasket material
Gasoline
Glue
Lacing leather
Leather belting
Lightweight oil
Mechanic's chalk

BUILDER/TOOL AND EQUIPMENT TECHNICIAN (Cont'd)

Neat's foot oil
Oil or grease (as suggested in the manufacturer's manual)
Prussian blue compound
Rags
Sanding belt material
Sandpaper
Silver brazing flux
Silver brazing rod, flat, 1/16"
Approved solvent
Steel wool
Steel and wood wedges
Welding flux
Welding material

Career Field: Construction Trades

Course: CONSTRUCTION PLANNING AND ESTIMATING SPECIALIST (SPECIAL)

Catalogue No.: A-412-0012/GP   Course Date: 1/15/74

Course Description:

Covers mathematics and use of the slide rule; fundamentals of blueprints and specifications; drafting fundamentals, material estimating of structures, utility systems, earthwork and paving projects; material procurement; fundamentals of labor and plant estimating; fundamentals of scheduling construction work using PERT/CPM.

Comments:

Navy requires that students be previously trained as an Engineering Aide (basic).

Course Content:

Blocks		Hours
I	Indoctrination	5
II	Mathematics	9
III	Blueprints and specifications	3
IV	Planning and estimating resources	7
V	Drafting fundamentals	13
VI	Estimating procedures	8
VII	Project estimating	112
VIII	Material procurement	19
IX	Project planning and scheduling	37
X	Summary, examination, practical projects	24
	TOTAL	237

Support Materials:

1. Instructor materials include curriculum guides, lesson plans and examinations totaling 638 pages.

2. Student materials include information sheets, work sheets, charts, etc. totaling 350 pages.

3. Two black and white films totaling 45 minutes
   One color film totaling 21 minutes
   One commercial color film totaling 16 minutes

Equipment:

Drafting instruments and sundries
Slide rule
Movie projector
Movie screen

Career Field: Construction Trades

Course: CONSTRUCTION ELECTRICIAN (BASIC)

Catalogue No.: A-721-0018/PH Course Date: 12/15/74

Course Description:

Course trains students to perform duties pertaining to the installation of overhead electrical distribution systems up to 5,000 volts; operate power plants up to 200 KW singly or in parallel; install and operate a tactical field telephone system; install interior wiring systems with associated electrical devices and equipment; and perform electrical tests and maintenance on 115/230 volt circuits.

Comments:

The Navy utilizes interactive presentations, demonstrations, peer instruction, self-study, etc. to teach this course, in addition, performance-oriented training is utlized throughout the course. Of the total hours in the course, 162 hours are devoted to performance-oriented training; as a consequence, large, costly equipment and tools are used to teach this course. It is therefore suggested that contact be made with local engineering and/or telephone companies for possible use of their equipment.

Course Content:

Blocks		Hours
I	Introduction: study techniques and safety policies, pile climbing, interior electrical work.	121
II	Power generation and distribution	107
	TOTAL	228

Support Materials:

1. Instructor materials include a curriculum outline, lesson plan examinations and checksheets totaling 421 pages.

2. Student materials include study guides, job sheets and hand-outs amounting to 130 pages. Several standard Navy texts and three commercially available texts are also utilized.

3. Sixteen black and white films totaling 238 minutes. Four commercial black and white films totaling 86 minutes.

Equipment:

Air circuit breaker, Model K600, Type K60, Generator switchgear
Air circuit breaker, Model AK-2-25, generator switchgear
Generator, diesel engine driver, portable, skid mounted, liquid cooled, AC, 15 kw, 0.8 P.F., 50/60 cycle, 3 phase, 15-0/1800 RPM, engine serial #3207441
(Same as above, only serial #3207415)
Load bank, generator, portable, reconnectable, 208/240/416-480 volts, single phase and 3 phase, 5 kw to 250 kw capacity
Earth auger, skid mtd turntable for 2.5 ton military truck
Truck, telephone and pole line construction, 2.5 ton, 4 x 6 GED w/winch, A frame
Switchboard, telephone, manual, fieldtype, for interconnecting 12 circuits, powered by two 1.5 volt dry cell batteries, Model SB-22A/PT
Electrician tool kits
Lineman tool kits
Electronic maintenance tool kits
Buck saw
Cable grip
Cant hooks
Carrying hooks
Digging bar
File gauge
Framing square
Hand bender, E.M.T., 1/2"
Hand bender, E.M.T., 3/4"

CONSTRUCTION ELECTRICIAN (BASIC) (Cont'd)

Jenny (mule), pole
Pole top rescue harness
Pole top gin with block and tackle
Pike poles
Ratchet bender
Short shovel, "D" handle
Stright shovel
Spoon shovel
Tag line
Tamping bar
6-foot step ladder
20-foot extension ladder
AC power circuit analyzer
Ammeter
Clamp-on ammeter
Phase sequence meter
Simpson 260 multimeter
Vibroground (groundmeter)
Split phase motors, 1/3 H.P.
Motor controllers
Practice poles, 20 foot
Practice poles, 35 foot
Push-button stations, stop-start
Temporary power panel and cord assembly, 50 amp.
Temporary power pole and panel assembly, 50 amp.
Tactical field telephone, Type TA-312/PT
Crossarm construction, primary line
Conduit
Electrical material display board
Flourescent and incandescent lighting
Ground fault protection
Electrician tool kit, 8000 6
Lineman tool kit, 8000 7
Electronic maintenance tool kit, 8000 8
Motor controller
Nonmetallic-sheathed cable circuits
Pole line erection tools
Pole line hardware, insulators, and protective devices
Pole guying hardware
Primary and secondary ties with deadend and protection devices
Single phase AC motor, cutaway
Splices and connections
Three phase motor, disassembled
Transformer connections
Transformer connection diagrams
16mm projection

CONSTRUCTION ELECTRICIAN (BASIC) (Cont'd)

Opaque projector
Overhead projector
Motion picture screen
Anchor rods and expanding type anchors
Batteries, BA-20
Nonmetallic boxes
Steel boxes
Braces (flat)
None-metallic sheathed cable
Circuit breakers
Circuit breaker panels
Crossarms and mounting hardware
Electrical devices and fittings
Electrical tape
Electrical metallic tubing
Field telephone wire, WD-2/TT
Fuse cutouts
Ground rod, copperweld, 8 foot x 5/8" diameter
Ground wires, #8 AWG, bare, solid, copper
Guy wire
Guy grips, preformed
Guy attachments
Lighting arresters
Lighting fixtures, incandescent and flourescent
Line, 6-foot lengths of 1/2"
Motors
Motor controllers
Pin insulators
Primary conductors, #6 AWG, M.H.D.
Rigid nonmetallic conduit
Rigid steel conduit
Secondary conductors, #12 AWG, solid copper
Split-bolt connectors
Strand vise with strand vise hook
Strain insulators

Career Field: Construction Trades

Course: CONSTRUCTION ELECTRICIAN/CABLE SPLICING (ADVANCED)

Catalogue No.: A-721-0023/M **Course Date:** 1/15/73

Course Description:

Course provides advance instruction in the techniques and procedures for joining power cable employing straight and branched joints; live and dead end test caps, bonding, boiling out and moisture testing for aerial and underground cable system. Install underground and aerial communications cable including cable terminations. Construct bridge and butt splices in lead and plastic sheathed communications cable. Locate faults using appropriate equipment, techniques and safety precautions.

Comments:

Navy requires that students be previously trained as a Construction Electricians (Basic).

Course Content:

Blocks		Hours
I	Introduction	6
II	Planning and estimating	11
III	Telephone cable splicing	95
IV	Power cable splices	209
V	Review and examination	21
	TOTAL	378

Support Materials:

1. Instructor materials include curriculum guides, lesson plans and examinations totaling 268 pages.

2. Student materials include information sheets, work

sheets, charts, etc. totaling 400 pages.

3. Three black and white films totaling 31 minutes.
   One commercial color film totaling 20 minutes.
   Nine charts
   30 transparencies

Equipment:

Movie projector
Movie screen
Overhead projector
Chalkboard and eraser
Pot head single conductor 5-KV complete
Portable D.C. Hypot 100-KV., 5 MA D.C. Test Set
Thumper cable fault locator
Cable fault detector
Cable splicers trailer
Cable cutter 3" hydraulic
Ladder, extension 28' with strand hooks and spurs
Flexible cable pulling grips
Aerial hand lines and blocks
Ladder frame canvas bag
Cablemen splicer's platform
Cablemen splicer's tent
Platform clamps
Platform hooks
Gas can, 5 gal.
Funnel
Engineer's hammer, 3 pound
Lineman's pliers 9 1/4
Electrician's screwdriver 3-16
Handle hammer machine 16
Safety strap, heavy duty
Climbers tree-pole with straps and pads
Lineman's tool belt
Electric glove, size 11
Protector rubber glove
Lineman's leather glove
Gaff gauges
Lineman's tool bag, canvas
Electrician's combination wrench
Canvas service bucket
Receiver headset test
Telephone testset w/dial
Cord replacement handset

CONSTRUCTION ELECTRICIAN/CABLE SPLICING (Cont'd)

Cord telephone receiver 2C
Battery BA30
Battery BA27
Battery BA9
Battery BA2
Test set WE 55A-516
Tester telephone WE 1017C
Tester telephone cable splicer WE 76B or TS-420/U
Cord cable splicer pick
Cord transfer clip
Meggars
Cableman's saw and guard
Adjustable hacksaw with blades
Penciling tools (polyethlene insulation)
Soldering coppers 2 lb.
Soldering coppers 4 lb.
Soldering copper handles
Cleaner sidewalk scraper blade
Soldering gun, electric
Soldering aid tool
Air flow safety goggles
Lineman's wrench
Cable splicers steel tool box
Telephone cable splicer's scissors
3-blade knife
Oblique cutting pliers 6"
Lineman's pliers 9 1/4"
Wood cable dresser
Cable splicer mirror
Wiping cloths 2" x 2"
Wiping cloths 3" x 3"
Catch cloths 6" x 6"
Catch cloths 8" x 8"
Fibre test boards
Cable sheath splitting knife (small)
Cable sheath splitting knife (large)
Shave hooks
File cleaner
Hand rasp, 12"
Flat bastard file 12"
Wood folding rule 6'
Shoe straight blade knife 4 1/4"
Stearine candles
Tool connector presser type "B"
Tinners hammer
Type "B" cable sheath slitters

Type "B" cable pliers
Type "B" cable sheath opener
Number stamp set
Letter stamp set
Unique pouring ladles 1/4 pt.
Unique pouring ladles 3/8 pt.
Temporary lashing wire clamp
Bond drift wood plugs
Resin pressure gun type E-4
Resin pressure gun type E-12 Pot hooks and handles
Paraffin pans
Paraffin pot
Paraffin dippers
Double jacketed compound kettles
Furnace unique gasoline
Folding windshields
Claw hammer
Screwdrivers (small, medium, and large)

Career Field: Construction Trades

Course: HEAVY EQUIPMENT OPERATOR (BASIC)

Catalogue No.: A-730-0010/PH Course Date: 11/15/74

Course Description:

This course is designed to train students to operate and perform operator's maintenance on automotive vehicles and construction equipment including five-ton trucks, truck tractors with semi-trailers, forklift trucks, front-end loaders, graders, crawler tractors with blade attachments, fuel tankers, and compaction equipment.

Comments:

Some rather costly heavy-duty vehicles are required to teach the "hands-on" portions of this course. It may be necessary for civilian institutions wishing to teach this curriculum to arrange access to such equipment, through their city, county, or state highway and/or by engineering departments, or from private construction firms.

Course Content:

Blocks		Hours
I	Introduction	14
II	Automotive vehicles	59
III	Forklifts	30
IV	Front-end loaders	30
V	Motorized grader	50
VI	Crawler tractors	1
VII	Load, lash, and off-load equipment	51
VIII	Miscellaneous equipment	27
	TOTAL	262

Support Materials:

1. Instructor materials include forms, curriculum guide, and other materials totaling 602 pages.

2. Student materials include handouts and workbooks totaling 328 pages.

3. Four black and white films totaling 79 minutes.
   One color film totaling 23 minutes.
   Four commercial color films totaling 98 minutes.

4. Seven flip charts.
   Two flock card sets totaling 80 cards.

Equipment:

Motion picture projector
Motion picture screen
Flip chart easels
Empty 55 gal. drum
Chain binders
12" x 12" timber blocks
37-passenger bus
20' length 3/8" chain
Crawler tractors
1" x 2" x 18" wood gradestakes
Front-end loader
Motor graders
40" x 48" wood pallet
5' 1 1/2" pipe
5' x 7' x 5' pontoon
Vib. self-propelled roller
Standard tool box (one per student)
Low-bed trailer
Stake trailer
5-ton tractor truck
Hearing protection devices
Traffic marker

Career Field: Construction Trades

Course: PLASTIC PIPE PATCHING PROCEDURES (SHORT)

Catalogue No.: J-780-404/N Course Date: 10/15/74

Course Description:

This short course trains students in applying patching materials to plastic piping systems. It covers the repair potential of plastic patching; emergency pipe patch procedures, safety precautions, pipe and material preparation, application sequence, and removal.

Comments:

Totally compatible with commercially available plastic plumbing material.

Course Content:

Blocks		Hours
I	Introduction to Plastics	1
II	Material Preparation and Demonstration	3
III	Practical Application	3
	TOTAL	7

Support Materials:

1. Instructor materials include lesson plans totaling 11 pages.
2. Student materials include five handouts totaling 40 pages.
3. One color film totaling 30 minutes.
4. 3 Charts

Training Aids:

Simple rupture (example)
Compound rupture (example)
Severed section (example)
Sand paper (medium)
Plastic
Activator
10" x 25' Woven Roven
10" x 25" P.V.C.
7" x 7" Void cover
Ball
String

Equipment:

16mm Motion Picture Projector
Movie Screen 4' x 6'
Shears, trimmers
Wrenches, pipe 14"
Buck saw for patch removal
Work benches and pipe stands
Hydrostatic pump and gages
Balance scales, gram weight
#2 Ball Peen hammers
1" cold chisels
8" screw drivers
36" rules
Per student
coveralls
rubber boots
rubber gloves
combustion clear goggles

Career Field: Construction Trades

Course: STEELWORKER (BASIC)

Catalogue No.: A-711-0015/PH

Course Date: Projected for July 1975

Course Description:

Course will include basic instruction in OXY-MAPP gas welding and cutting; electric arc welding; mathematics; blueprint reading; sheetmetal layout; use, care and splicing of wire rope and fiber line; reeving blocks and tackle; field rigging; assembly and use of rigid frame structures and pontoons; bending and placing reinforcing steel for concrete construction.

Comments:

As indicated above this course is now undergoing extensive revision and will not be ready for validation until July of this year. As a consequence, details regarding course-hour-content, teaching materials and equipment requirements were not available at the time this report was compiled.

Career Field: Construction Trades

Course: STEELWORKER (SHEETMETAL) (ADVANCED)

Catalogue No.: A-730-0010/GP Course Date: 1/15/72

Course Description:

This course teaches students to layout, cut and prepare joints, bend and fabricate complex sheetmetal, aluminum and copper shapes, soldering special joints, operation of manual and power driven sheetmetal tools and machinery.

Comments:

Prerequisite for this course is Steelworker (Basic).

Course Content:

Blocks		Hours
I	Introduction	10
II	Mathematics	8
III	Blueprint reading, planning, and estimating	41
IV	Sheetmetal pattern layout	45
V	Sheetmetal tools and equipment	5
VI	Soldering	7
VII	Sheetmetal fabrication and installation	49
VIII	Review and final examination	7
	TOTAL	172

Support Materials:

1. Instructor materials total 554 pages.

STEELWORKER (SHEETMETAL) (Cont'd)

2. Student materials total 525 pages.

3. Ten black and white films totaling 128 minutes.
   Three commercial color films totaling 83 minutes.

4. 100 Transparencies
   10 Charts

Equipment:

Cornice brake
Finger brake
Bar folder
Pittsburgh lock former
Soldering iron
Beading machine
Burring machine
Crimping machine
Turning machine
Turret punch
Sheetmetal rollers
Power shears
Ring and circle shears
Sheetmetal squaring shears
Treadle shears
Slip rolls
Sheetmetal stakes
Drafting table
Spot welder

Tools
Blind rivet set
Acid brush
File card
Flat chisel, 1/2" x 6"
Drafting set
Electric drill, 1/4"
10" flat bastard files
8" round bastard files
French curves
Sheet and plate gage
Hand rivet gun
Hacksaw
Ballpeen hammer, 12 oz.
Electric hammer
Riveting hammer

Setting hammer
Handgroovers, nos. 00, 0, 2, and 4
Electric soldering irons
Wooden mallet
End cutting nipper
Combination pliers, 10"
Trammel points
Protractors
Center and prick punch
Rivet set, nos. 2, 4, 5, 6, and 7
Circumference rule, 36"
Architect's scales
Straight screwdriver, 6"
Sheetmetal scribe
Electric hand shears
Aviation snips, M-1, M-2, and M-3
Combination snips
Straight tin snips
Hawkbill snips
Bulldog tin snips
Circular tin snips, 16"
Trojan snips
Soldering coppers
Combination square
Steel square, 12"
6' tapes
Tool box
Triangles
Wide flange visegrip
Whitney punch

Materials
Alcohol
Aluminum
Ammonium chloride
Black iron
Copper
Drawing paper
Emery cloth (fine)
Erasers
Galvanized iron
Hydrochloric acid
Steel ink
Lithium chloride
Nails
Template paper
Nos. 2 and 4H pencils

STEELWORKER (SHEETMETAL) (Cont'd)

Potassium chloride
Potassium fluoride
Blind button head rivets 1/8" x 1/8"
Scotch tape
Sheetmetal screws, nos. 6 and 8, 3/4" long
Galvanized sheetmetal, 26 gage
Sodium chloride
Sodium pyrophosphate
Solder, Sn 50/Pb 50
Solder, Sn 40/Pb 60
Solder, Sn 91/Sb 9
Stainless steel
Stannous chloride
Steel ink remover
Steel wool
Turpentine
Water white rosin
Zinc
16mm motion picture projector
Overhead projector
Projector screen

Career Field: Construction Trades

Course: STEELWORKER (MAINTENANCE WELDING) (ADVANCED)

Catalogue No.: A-701-0037/GP   Course Date: 1/15/75

Course Description:

Covers basic welding techniques, metallurgy and stress analysis as it relates to welding repair. After evaluation, preparation and selection of proper filler metals, student will be able to repair machinery and equipment employing accepted welding techniques. The welder will be capable of making successful repairs under adverse conditions, such as poor equipment, improper welding alloys, weather conditions, etc.

Comments:

Prerequisite for this course is Steelworker (Basic).

Course Content:

Blocks		Hours
I	Indoctrination	2
II	Welding consumables	7
III	Applied Welding Metallurgy and General and High Strength Brazing of steel	16
IV	Heat treatment of metals and silver brazing of steel	7
V	Welding processes and silver brazing of stainless steel	7
VI	Welding consumable selection and silver brazing brass	6
VII	Stress analysis and cast iron and aluminum welding	16
VIII	Welding procedures and torch soldering	8

STEELWORKER (MAINTENANCE WELDING) (Cont'd)

IX	Techniques of arc welding in maintenance	23
X	Wearfacing in maintenance welding	15
XI	Gas tungsten arc in maintenance welding	7
XII	Welding certification test	6
	TOTAL	120

Support Materials:

1. Instructor materials include instruction sheets, course outlines, and examinations totaling 428 pages.
2. Student materials include information sheets, handouts, charts, etc. totaling 104 pages.
3. 16 slides

Equipment:

Oxy-Mapp Welding and Cutting Equipment
Oxy-Mapp Radiograph Cutting Machine #10
Tig Welding Equipment (gas tungsten arc) MP-18
Metal arc equipment: Model 330 A/BP AC/DC
Metal spray facing torch, Model S-1
Mig welding equipment (gas metal arc) Model RCC-610
X-ray unit (type 200KV-5MA)
Chisels
Easel
Gloves, welding
Welding goggles
Flash goggles
Ball peen hammer
Arc hood
Pliers 10"
Slag hammer
Spark lighter
Tip cleaners
Wire brush
Base metal
  Aluminum
    cast plates, 30° bevel, 3/8" x 3" x 8"

        - plate, type 4043, 3/8" x 3" x 6"
        - sheets, type 4043, 16 ga x 2" x 4"
    - Brass, 1/16" x 1"
    - Bronze, 16 ga x 2" x 4"
    - Cast iron, 30° bevel, 3/8" x 3" x 6"
    - Stainless (type 308)
        - sheet, 1/16" x 1"
        - sheet, 1/16" x 2"
        - sheet, 20 ga x 2' x 4'
    - Steel (mild)
        - plate 1/8" x 1" x 4"
        - plate 3/16" x 4"
        - plate 30° bevel, 3/8" x 4" x 8"
            - 1 sheet, 1/16" x 2" x 4"
            - 2 bar, 1/4" x 1" x 10"
            - 3 round, 1/2"
    - Cast iron scrap
- Construction equipment parts (worn)
- Chalk
- Colored pens
- Flip charts
- Note paper
- Pencils
- Student folder
- Welding gases
    - argon
    - mapp
    - oxygen
- Welding fluxes
    - general brazing
    - high-strength brazing
    - silver brazing
    - solder
- Welding electrodes
    - aluminum 1/8", 5/32", 3/16"
    - brazing 1/8", 3/16"
    - carbon 1/4"
    - cast iron (55% Ni-45% fe) 1/8" - 5/32"
    - Chamferring 1/8"
    - stainless, type 308/16 3/32"
    - E 7018 low hydrogen 1/8", 5/32"
    - tungsten 1/16", 3/32"
    - wearfacing electrodes
        - abrasive resistant (60 RC) 1/8", 3/16"
        - build up (30 RC) 3/16"
    - intermediate wearfacing (50 RC) 3/16"

- mananese (R-N1-MN) (45 RC) 3/16"
- Welding rods
  - aluminum, type 4043, 3/32" x 36"
  - brazing, phosphor bronze 3/32", 1/8"
  - brazing, high strength, flux coated 1/8"
  - bronze, flux coated 1/8" x 18"
  - cast iron, flux coated 1/8" x 18"
  - solder, 96/4 (tin-silver) 1/8"
  - solder, 50/50, 1/8"
  - silver brazing (cadmium free) 1/16"
  - stainless, type 308, 1/16" x 36"
- Belzona molecular metal
- Case hardening compound
- Holding and heat resisting compound
- Metal spray powder
- Slide projector and screen

Career Field: Construction Trades

Course: UTILITIESMAN (BASIC)

Catalogue No.: A-720-0012/GP   Course Date: 1/6/74

Course Description:

This course covers care and use of tools; blueprint reading; pumps and compressors, field sanitation and sewage systems; techniques of plumbing; principles of air conditioning and refrigeration; operation and maintenance of boilers; principles of water treatment and purification; operation and maintenance of water purification units.

Comments:

The Construction Apprentice course is a prerequisite for this course.

Course Content:

Blocks		Hours
I	Introduction	7
II	Plumbing and pumps	195
III	Boilers	60
IV	Refrigeration	70
	TOTAL	332

Support Materials:

1. Instructor materials include a curriculum guide, instructor's guide, and examinations totaling 891 pages.
2. Student materials totaling 300 pages.
3. 14 black and white films totaling 246 minutes.
   2 commercial color films totaling 62 minutes.
4. Two transparencies

UTILITIESMAN (BASIC) (Cont'd)

One 80-frame filmstrip
32 slides
155 charts

Equipment:

Cyclotherm firetube boiler
Continental firetube boiler
York-Shipley firetube boiler
Dewey-Shephard firetube boiler
Pacific Pump Comp. centrifugal pump
Marlow Pump Comp. diaphragm pump
PKG (IEK) refrigeration unit
PKG (Thermo King) refrigeration unit
Rigid 535 threading machine
Toldeo threading machine
Rigid Porta Pony threading machine
F/5 Men refrigeration kit
F/5 Men plumbing kit
Movie projector
Overhead projector
Flip chart easel
Slide projector
Projector screen

Career Field: Construction Trades

Course: WATER WELL DRILLING SPECIALIST (SPECIAL)

Catalogue No.: A-730-0014/GP Course Date: 1/15/70

Course Description:

Gives student technical knowledge and skills essential to effective performance as a water well drilling technician. Covers setting-up, operation, maintenance and lubrication of rotary well drilling machines; well development and completion; testing precautions; includes the fundamentals of geology and ground water exploration.

Comments:

Navy requires that students be previously trained as an Equipment Operator (Basic).

Course Content:

Blocks		Hours
I	Registration and orientation	2
II	Well drilling and development	87
III	Well development and completion	25
IV	Course summary	3
	TOTAL	117

Support Materials:

1. Instructor materials include curriculum guides, lesson plans and examinations totaling 148 pages.

2. Student materials include information sheets, work sheets, charts, etc. totaling 100 pages.

3. One color commercial film totaling 30 minutes
Three transparencies
40 slides
Seven charts

WATER WELL DRILLING SPECIALIST (Cont'd)

Equipment:

Comparator kit, model U-2374, Wallace and Tiernan, Inc., Bellville, N.J.
Drilling-machine, rotary type, model T-8M-CE, Davey Compressor Co., Kent, Ohio
Hammerbilt, Series 100, Mission Mfg. Co., Houston, Texas
Hammerdril, Series 100, Mission Mfg. Co., Houston, Texas
Lubricating equipment
Centrifugal pump
Turbine deep well pump
Hand pump (pitcher type)
Reciprocating pump
Rotary-gear pump (single stage)
Submersible pump
Well screens
Heavy well drilling tools
Handtools for servicing and adjusting
Thread compound
Lubricant
Rags
Movie projector
Movie screen
Slide projector
Overhead projector

Career Field: Computers and EDP (Repair)

Course: COMPUTER FUNDAMENTALS (BASIC)

Catalogue No.: A-100-0032/GR **Course Date:** 10/1/74

Course Description:

This course requires an average of three hours homework per night beyond class time. The accent is on sequential building from logical reasoning. A prerequisite for this course is the Navy Basic Electronics and Electricity Course.

Course Content:

Blocks		Hours
I	Fundamentals of Electronic Data Processing	27
II	Five Basic Units of a Computer, Operation and Inter-relationships	47
III	Programming	3
IV	Maintenance Routines	2
V	Special Circuits	8
VI	Digital to Analog and Analog to Digital Conversion	3
	TOTAL	90

Support Materials:

1. Instructor materials include instructor guides and examinations totaling 430 pages.
2. Student materials include textual material totaling 408 pages, plus Government Printing Office publications.
3. Ten color films totaling 210 minutes.
4. 51 Transparencies
   15 Charts

COMPUTER FUNDAMENTALS (Cont'd)

Equipment:

Logic Demonstrator, Control and Display Unit
Logitran-Four, Digital Log Trainer Digiac

Career Field: Computers and EDP (Operation)

Course: DIGITAL PRINCIPLES AND TECHNIQUES (BASIC)

Catalogue No.: A-100-0021/N Course Date: 6/15/73

Course Description:

This course is designed to train students in fundamental concepts relating to the operation of digital computers.

Comments:

Prerequisite to this course is the Navy basic electricity and electronics course.

Course Content:

Blocks		Hours
I	Introduction	1 1/2
II	Numbering Systems	20
III	Logic Circuitry and Boolean Algebra	15
IV	Basic Computer Fundamentals	37
V	Programming	37
	TOTAL	110 1/2

Support Materials:

1. Instructor materials include a curriculum guide, lesson plans, and tests totaling 220 pages.
2. Student materials include lesson plans, Government Printing Office documents, and a commercial program manual totaling 70 pages.
3. 3 color films totaling 60 minutes.
4. 75 Transparencies

Equipment:

Bi-Tran Six Training Computer
Chalk board
Overhead projector
Motion picture projector
Projector screen

Career Field: Education and Training

Course: BASIC INSTRUCTOR (SPECIAL)

Catalogue No.: A-012-0011/SD   Course Date: 3/6/74

Course Description:

This course is designed to qualify students as instructors, under conditions that simulate actual teaching environments, with particular emphasis upon the development of proper attitudes, basic principles, methods and techniques of effective instruction.

Comments:

There are three practice teaching sessions shown in the Course Content. Each of these sessions is divided into three parts which are a review of the requirements for each session, preparation for each session, and the actual teaching session itself.

During the active part of the teaching sessions, videotapes are made so that students can assess their own performances.

Course Content:

Blocks		Hours
I	Orientation	3
II	Learning Processes	5
III	Task Analysis	4
IV	Learning Objectives	2
V	Criterion Testing I	2
VI	Communications	5
VII	Instructor Guide(s)	3
VIII	Chalk Board Techniques	2
IX	Practice Teaching I	19

BASIC INSTRUCTOR (Cont'd)

X	Instruction Sheets	3
XI	Training Aids	7
XII	Practice Teaching II	15
XIII	Demonstration and Performance	4
XIV	Practice Teaching III	18
XV	Counseling	2
XVI	Evaluation of Classroom Instruction	3
XVII	Practice Teaching IV	17
XVIII	Programmed Instruction	1
XIX	Systems	2
XX	Criterion Testing II	4
XXI	Practice Teaching V	16
	TOTAL	137

Support Materials:

1. Instructor materials include lesson plans totaling 75 pages.
2. Student materials include class notes and programmed instruction totaling 200 pages.
3. 3 commercial color films totaling 76 minutes.
   3 videotapes totaling 280 minutes.
4. 22 Charts
   50 Slides
   42 Transparencies
   142 Flock cards

Equipment:

16mm motion picture projector

BASIC INSTRUCTOR (Cont'd)

Opaque projector
Overhead projector
35mm slide projector
Audio tape recorder
Videotape recorder, camera, and playback equipment

Career Field: Education and Training

Course: PROGRAMMED INSTRUCTION WRITER (SHORT)

Catalogue No.: A-510-0016/N   Course Date: 10/15/70

Course Description:

Affords students who have completed the Instructor (Basic) curriculum instruction and practice in criterion reference course development. Covers all major factors in instructional systems design including task analysis, curriculum design, development of learning objectives, preparation of programs and other learning materials, testing, and validation procedures.

Comments:

While titled Programmed Instruction Writer, this is really a course in the design and development of individualized learning systems. The course design, itself is fully individualized.

Course Content:

Blocks		Hours
I	Orientation to the Learning Supervisor Course	4.5
II	Individualized Media and Materials	3.5
III	Maintaining Conditions Favorable to the Learning Environment	5.5
IV	Diagnostic Devices	3.5
V	Academic Counseling	10.0
	TOTAL	17.0

Support Materials:

1. Instructor materials include pre and post tests, instruction guide, and curriculum guide totaling 170 pages.

2. Student materials include programmed instruction and handouts totaling 536 pages, and one commercial text.

3. 2 commercial color films totaling 61 minutes.

4. 2 sound/slide programs containing 120 slides and 2 audio cassettes totaling 77 minutes.
   60 Transparencies
   290 Slides
   10 Charts

Equipment:

Motion picture projector
Motion picture screen
Overhead projector
Slide projector
Tape recorder

Career Field: Education and Training

Course: TECHNICAL CURRICULUM DEVELOPMENT (SHORT)

Catalogue No.: A-912-0031-32/N Course Date: 6/15/71

Course Description:

This course is designed to train students to design or redesign a course of instruction in technically oriented fields.

Comments:

The approach to course design inherent in this curriculum is "criterion" rather than "norm" reference.

Course Content:

Blocks		Hours
I	Introduction	2
II	Systems Approach to Training	1
III	Course Mission	2
IV	Task Inventory	5
V	Job Entry Standards	2 1/2
VI	Task Grouping	2 1/2
VII	Training Techniques	2
VIII	Objectives	5
IX	Criterion Tests	2 1/2
X	Training Package	4
XI	Critique	1/2
	TOTAL	29

TECHNICAL CURRICULUM DEVELOPMENT (Cont'd)

Support Materials:

1. Instructor materials include a curriculum guide and lesson plans totaling 145 pages.
2. Student materials include Government Printing Office documents, commercial texts, and original material totaling 120 pages.
3. 50 Transparencies

Equipment:

Overhead projector
Projector screen

Career Field: Electricity and Electronics

Course: BASIC ELECTRICITY AND ELECTRONICS (PREP)

Catalogue No.: A-100-001/SD Course Date: 6/74

Course Description:

Course covers basic DC and AC theory. Basic mathematics to solve simple electrical formulas are presented along with the use and application of basic test equipment (ie: multimeter, VTVM and audiosignal generator).

Comments:

This course is designed to be presented on an "individualized" basis in which the student proceeds at his own pace. Thousands of Navy students have been through this course which has been improved and updated on a regular schedule on the basis of "feedback" from student performance. The nature of the techniques employed in this "learning-system" makes it mandatory for the instructor to be more of a "learning supervisor" than a teacher in the classic academic sense of the term. The "learning supervisor", however, should be very well grounded in DC and AC circuit principles.

This course is the prerequisite for additional training in some 58 Navy ratings, and additional modules to extend the course coverage to higher levels of electrical and electronic theory are now under development.

Course Content:

Blocks		Hours
0	Introduction and Orientation	22
I	Electrical Current	12
II	Voltage	14
III	Resistance	10

BASIC ELECTRICITY AND ELECTRONICS (Cont'd)

IV	Measuring Current and Voltage in Series Circuits	8
V	Relationships of Current, Voltage and Resistance	8
VI	Parallel Circuits	10
VII	Combination Circuits and Voltage Dividers	8
VIII	Induction	10
IX	Relationships of Current, Counter EMF and Voltage in LR Circuits	14
X	Transformers	12
XI	Capacitance	16
XII	Series AC Resistive-Reactive	14
XIII	Series AC RLC Circuits and Resonance	8
XIV	Parallel AC Resistive-Reactive Circuits	12
	TOTAL	180*

*Note: Hours shown are average, not fixed. Since this is a self-paced course system, some students will work faster/slower than others.

Support Materials:

1. A special "Learning Supervisor's Portfolio" is supplied. It contains guidance documents on the instructional methodology employed in the system as well as step-by-step instructions on the implementation of the course. It also gives the instructor the complete set of testing materials utilized in the course along with answer keys. The instructor is also supplied with detailed circuit diagrams, schematics, construction plans and parts lists for four "practice boards" which will be constructed locally with parts available from electronic supply houses such as Lafayette and Radio Shack.

If such systems as Philco-Ford, Lab-Volt or Broadhead-Garrett are already available in your school you will find you have just about everything you need to construct the above circuits.

2. Student test and programmed materials in the form of 15 individual booklets (covering Blocks 0 thru 14), a special "Progress Check Module" manual which is the student study guide and reference book, and a Laboratory Experiment Manual.

3. Nineteen individual sound slide/presentations totaling 761-35MM slides and 19 audio/cue cassette tapes.

4. Twenty additional long-play cassette tapes containing 71 individual lesson narratives of the material presented in each module booklet.

Equipment and Facility Requirements:

35 mm slide projector
Cassette tape player
Small projection screen
1 multimeter for every 2 students
1 VTVM
1 oscilloscope
1 audio frequency generator
1 ammeter

Approximately $250.00 investment in electronic components to build locally produced devices.

A classroom with simple worktables or (ideally) individualized carrels and chairs.

Note: This individualized learning system is now available from the U.S. Naval Institute. The sound/slide a/v material is also available in 1/2" reel-to-reel or 3/4" cassettes video tape.

Career Field: Electricity and Electronics

Course: BASIC ELECTRICITY AND ELECTRONICS PART II (PREP)

Catalogue No.: No number assigned as yet

Course Date: Projected for August 1975

Course Description:

Course system extends Part I of the Basic Electricity and Electronics course to cover superhet theory, power supplies, vacuum tube principles, transistors, oscillators, multivibrators, wave shapers, and transistor theory.

Comments:

At the time this course was reviewed it was still in the development-validation stage with projected completion for August 1975. While the Navy will utilize Beseler 2300 machines to present the audiovisual portions of this system, the slide-sound elements of the course could be produced in other formats than the cassette-audio tape/super 8mm cartridge design that fits the 2300 and the "PIP" machines which require these formats. For the most part, the "hardware" training devices utilized by the Navy in presenting the "hands-on" portions of the system are commercially available. The solid state portions of the course are the exception to this rule and require a special Navy designed transistor "plug-in" circuit trainer. The team of Navy experts developing this system state, however, that there are commercially available substitutes for this device that could be utilized in civilian settings with some minor alterations in the approach utilized in Blocks 18-25. When fully developed this will be a completely individualized, self-paced system which at the time of this course report had no commercially available equivalent. Since the course was not tested and validated at the time this report was compiled, no firm contact hour projections could be assigned to the blocks listed in the "content" chart which follows.

BASIC ELECTRICITY AND ELECTRONICS PART II (Cont'd)

Course Content:

Blocks

XV Introduction to Electronic Maintenance

XVI Basic Troubleshooting: Radio Frequency and Intermediate Frequency Amplifier

XVII Basic Troubleshooting: Systems Concept, Navy Documentation

XVIII Basic Power Supplies

XIX Vacuum Tube Power Supplies

XX Basic Transistor Theory

XXI Multi-Element Vacuum Tubes

XXII Oscillators

XXIII Multivibrators

XXIV Wave Shaping Circuits

XXV Special Devices

Support Materials:

1. Instructor materials includes tests, curriculum guide, lesson plans and instructor's materials totaling 322 pages.

2. Student materials include printed modules, performance guides, and other programmed materials totaling 1225 pages.

3. 29 audio/visual lessons which are comprised of 3600 visual frames and 29 60-minute audio cassettes pulsed at 150 hz. Navy version is produced for use on Beseler 2300 machines, but lessons could be produced as sound/slide or video-tape.

Equipment:

Appropriate audio-visual equipment
AC/DC voltmeters
Oscilloscope
Signal generator
Solid-state plug-in trainer
NIDA circuit boards, power supplies, transceivers, amplifiers, oscillators, and function generators (approximately $3500 minimal costs)
Heathkit superhet kits
RCA 6F16

Career Field: Electricity and Electronics

Course: ELECTRONICS TECHNICIAN (BASIC)

Catalogue No.: A-100-0012/GL, A-100-0014/GL

Course Date: 6/24/74

Course Description:

This course is designed to teach students the skills required to maintain a wide variety of electronic equipment, skill in the use of electronic test equipment, and skill in the interpretation and use of technical equipment manuals for the maintenance of electronic equipment. The Navy Basic Electricity and Electronics course is the prerequisite for this course.

Comments:

While the Navy uses a special hardware set-up to teach this course in the lab phases, the same set-ups can be achieved by utilizing equipment from Heath/Schlumberger Electronic Instruments.

Course Content:

Blocks		Hours
I	Introduction to Electronics and Basic Test Equipment	28
II	Transistor Fundamentals	68
III	Vacuum Tube Fundamentals	44
IV	Transmitters	63
V	Receivers	67
VI	Pulse Techniques	120
VII	Radar/Logic Techniques	90
	TOTAL	480

ELECTRONICS TECHNICIAN (BASIC)   (Cont'd)

Support Materials:

1. Instructor materials include curriculum guides and examinations totaling 1900 pages.
2. Student materials include programmed instruction, job sheets, handouts, and schematics totaling 600 pages.
3. 70 black and white films totaling 1,308 minutes
   25 color films totaling 591 minutes.
4. 1800 Transparencies

Equipment:

1700N Dual Trace Oscilloscope
AN/PSM-4 Multimeter
CAQI 212 or
SG/299 Pulse Generators
AN/URM-127 or TS-382D Signal Generator
AN/USM-34 Voltmeter
555/N Oscilloscope
AN/URM-133 Spectrum Analyzer
11D7 Lrg. Scr. Oscilloscope
AN/USM-116 VTVM
AN/PSM-1 Megger
AN/PSM-4 Multimeter
AN/URM-25 Signal Generator

Training Aids:

M70AN Logic Trainer Hickock
MAC 735A Voltmeter/Counter Hickock
NAVPERS 70118 Synchro Training Board
6B19-13 RC Oscillator (BEST)
6B19-15 IF amplifier (BEST)
6B19-16 Cathode Follower (BEST)
6B19-19 Waveshaper (BEST)
6B19-20 Clipper/Clamper (BEST)
6B19-21 Sweep Generator (BEST)
6B19-22 Multivibrators (BEST)
6B19-25 Counter (BEST)
6B19-27 3-Plug adapter (BEST)
6B19-29 Power Supply (BEST)
6B19-01 Power Supply (BEST)

ELECTRONICS TECHNICIAN (BASIC) (Cont'd)

6B19-02 Voltage Regulator (BEST)
6B19-04 Oscilloscope (BEST)
6B19-09 Vacuum Tube Analyzer (BEST)
6B19-10 Transistor Analyzer (BEST)
6B19-11 Transistor Receiver (BEST)
6B19-26 Class B & C Amplifiers (BEST)

Career Field: Electricity and Electronics

Course: ELECTRIC MOTOR REWINDER (BASIC) (SPECIAL)

Catalogue No.: A-662-0021/N   **Course Date:** 8/15/73

Course Description:

This course will provide the student with the knowledge and skills necessary to function as a rewind technician and to train others in the methods and techniques of motor rewinding.

Course Content:

Blocks		Hours
I	Introduction	3
II	DC Motors	68
III	AC Motors	64
	TOTAL	135

Support Materials:

1. Instructor materials include lesson plans, a curriculum guide, and examinations totaling 393 pages.
2. Student materials include handouts totaling 300 pages.
3. Four black and white films totaling 97 minutes.
4. 67 Transparencies

Equipment:

8 DC Compound Motors 1.5 HP, 240 VDC
8 Wooden Coil Forms (Field Coils)
1 Simplex Lap Armature
1 Duplex Double Reentrant Lap Armature
1 Duplex Single Reentrant Lap Armature
8 Armature Test Stands
8 Rewound Field Coils

ELECTRIC MOTOR REWINDER (Cont'd)

1 Wave Wound Armature
8 Split Phase Motors
4 Skein Form Boards
8 Wooden Coil Forms (Split Phase Motor)
8 Three Phase Motors
2 Coil Winding Machines
1 Bake Oven
1 Burn Out Oven
1 Dip Tank
1 DC Motor Controller
1 DC Motor Generator Set
2 AC Across Line Controllers
2 Meggers
2 Wheatstone Bridges
8 Multimeters
4 Milliammeters
4 Millivoltmeters
4 6VDC Power Supplies
4 Rheostats
2 External Growlers - Hacksaw Blades
40 Test Leads
4 Insulation Rings
8 Pocket Compasses
1 Industrial Analyzer

Materials:

Insulation Paper
Linen Tape
Insulated Magnet Wire
Lead Wire #16, 14, 12 and 10
Insulating Varnish
Slot Wedges
Solder
Serving Cord
Insulation Sleeving

Tools:
Tool kit per student consisting of:

6" Screwdriver
File and Handle
6" Adjustable Wrench
8" Adjustable Wrench
3/8" comb wrench
7/16" comb wrench
1/2" comb wrench

ELECTRIC MOTOR REWINDER (Cont'd)

9/16" comb wrench
Diagonal Cutter
Needle Nose Pliers
Electrician's Scissors
3/16" Wire Tamper
6/16" Wire Tamper
Solder Roll
Solder Paste
American Wire Gauge
Insulation Stripper
6" Machinist Rule
4"-1/4" Blade Screwdriver
6"-3/16" Blade Screwdriver
5" #2 Phillips Screwdriver
Center Punch
100W Soldering Iron
200W Soldering Iron
Sash Brush
4oz Ballpeen Hammer
Soft Face Hammer
Wire Insulation Stripper
Electrician's Knife
Lock and Key

Career Field: Electricity and Electronics

Course: ELECTRONIC TEST EQUIPMENT OPERATION/OPERATIONAL USE (SHORT)

Catalogue No.: J-100-700K/N Course Date: 11/22/71

Course Description:

This short-course is designed to train students in the correct methods of operation and application of electronic test equipment used in conjunction with the maintenance of electronic equipment.

Comments:

At least the Navy basic electricity and electronics course or its equivalent is a necessary prerequisite to this instruction.

Course Content:

Blocks		Hours
I	Introduction	1
II	Successful Utilization of Electronic Test equipment	5
III	Equipment Operational Methods and Techniques	22
IV	Review, Examination, and Critique	15
	TOTAL	43

Support Materials:

1. Instructor materials include a curriculum guide, lesson plans, and tests totaling 195 pages.
2. Student materials include a workbook totaling 75 pages.
3. One color film totaling 17 minutes.
   One black and white film totaling 15 minutes.
4. 20 Transparencies

Equipment:

Typewriter
First aid kit
2 Fire extinguishers
Multimeter
RF sig. gen.
AF sig. gen.
Oscilloscope
Electronic frequency counter
Time mark generator
Inductance bridge
Transistor tester
Diff. volt meter, CCUH-803 C/AG
Square wave generator
VTVM
Power supply
LCR bridge
UHF sig. gen.

Career Field: Firefighting

Course: SHIPBOARD DAMAGE CONTROL AND FIREFIGHTING (SHORT)

Catalogue No.: J-46/780-4062/N   Course Date: 10/15/74

Course Description:

This course trains the student to effectively control damage and fight fires aboard ship, including the abilities to select and use the proper extinguishing agent, combat special hazard fires and fires involving high explosives and nuclear weapons, operate and use the oxygen breathing apparatus, operate the P-250 pump, combat helicopter fires, combat deep fat fryer fires, and operate twin engine systems on oil spray fires in engineering spaces.

Course Content:

Phase I - Damage Control

Blocks		Hours
I	Introduction	4
II	Shoring	5
III	Temporary Repairs to Hull Ruptures	2
IV	Watertight Integrity	4
V	Investigating and Reporting Damage	2
VI	Damage Control Piping Systems	1
VII	Care and Operation of Damage Control Equipment	1
VIII	Practical Exercise in Water Environment Trainer	2
IX	Examination and Critique	2

Phase II - Firefighting

Blocks		Hours
I	Introduction	5

II	Fire Extinguishment - Water	2
III	Fire Extinguishment - Mechanical	3
IV	Portable Emergency Fire Pumps	1
V	Oxygen Breathing Apparatus	2
VI	Construction and Use of Carbon Dioxide and Dry Chemical Extinguishers	1
VII	Special Hazards, Materials, Nuclear and High Explosive Weapon Fires	3
VIII	Helicopter, Fire Party Training (Practical)	1
IX	Fire Extinguishment - Water (Random Fires)	1
X	Review, Examination, and Critique	1
	TOTAL	39

Support Materials:

1. Instructor materials include lesson plans and a curriculum guide totaling 180 pages.

2. Student materials include class notes and other learning aids totaling 60 pages.

3. Six black and white films totaling 180 minutes.
   Two color films totaling 60 minutes.

4. 5 Charts
5. 35 Slides
   3 Transparencies

Special Facilities:

One water environment trainer equipped to permit practical exercises in the following areas:
  plugging and patching of hull ruptures
  shoring damaged structural members

dewatering flooded spaces
repairing damaged piping systems
DC communications circuits

Training Aids:

3 Cut-away displays

Equipment:

Single Jet Eductor
Peripheral Jet Eductor
Electric Submersible Pump with all related equipment
Shoring Tools
Plugging and Patching Tools
Electrical Repair Kit
Model 27-B-3 Stability Demonstrator
16mm Motion Picture Projector
Overhead Projector
Motion Picture Screen
Pointer
Simulated Bomb Assembly equipped with Thermocouple
Open Field Electric Motor
Model P-250 Fire Pumps with Suction Hose and Foot Valve
1 1/2" All Purpose Nozzle
2 1/2" All Purpose Nozzle
2 1/2" x 12' Applicator
1 1/2" x 10' Applicator
1 1/2" x 4' Applicator
2 1/2" x 1 1/2" "Y" Gate Valve
2 1/2" x 1 1/2" x 1 1/2" "TRI" Gate Valve
2 1/2" x 50' Fire Hose
1 1/2" x 50' Fire Hose
Mechanical Foam Nozzle with Pickup Tube
2 1/2" Self-Cleaning Marine Strainer
1 1/2" Self-Cleaning Marine Strainer
Hose and Reel Carbon Dioxide System with two 50 lb. capacity Cylinders and 50' Hose
Portable 15 lb. CO2 Fire Extinguishers
50 lb. capacity CO2 Cylinders
Type A-3 Oxygen Breathing Apparatus with Quick Starting Cannister
Special Three-way Gate Valves (P-250 pump)
Rubber or Arctic Boots
Foul Weather Clothing

SHIPBOARD DAMAGE CONTROL AND FIREFIGHTING (Cont'd)

Rubber or Cotton Gloves
Water Motor Proportioner (FP-180)
4" Eductor
Peri-jet
15'D x 4'H Steel Tank
  Class "B" Fires
3'D x 2'H Steel Pan
  Gasoline Fires
Portable 30 lb. Dry Chemical Extinguishers
Portable Electric Blower
Galvanized Bucket
Portable Pneumatic Blower
Flame Safety Lamp
Twin Agent Unit
Proximity Suits
Combustible Gas Indicator
1 1/2" FF Foam Nozzles
Aircraft Crash Kit

Career Field: Food Service

Course: COOKING, BAKING, AND SERVING (Basic)

Catalogue No.: A-800-0013/SD   Course Date: 8/15/71

Course Description:

This course trains individuals to cook, bake, and serve meals. Training includes methods of food service computations; principles of nutrition and their application to menu planning; correct practice of sanitation and safety precautions as applied to personnel, equipment, preparation and serving food: principles, methods and techniques in cooking and baking (including handling of dehydrated foods), using standard recipes.

Comments:

A complete commercial kitchen facility is necessary for this course.

Course Content:

Blocks		Hours
I	Food Service Equipment and Sanitation	41
II	Food Production - Cooking	58
III	Food Production - Baking	28
IVA	Large Kitchen Operations	87
IVB	Dining Room Service	77
	TOTAL	291

Support Materials:

1. Instructor materials include a curriculum guide totaling 190 pages.

2. Student materials include study guides and workbooks

totaling approximately 1,440 pages.

3. 19 black and white films totaling 478 minutes.
   2 color films totaling 61 minutes.
   3 commercial color films totaling 90 minutes.

4. 7 color slides
   3,000 black and white slides
   25 black and white transparencies
   1,000 flock cards

Equipment:

Overhead Projector
16mm Projector
35mm Slide Projector
Ice Cream Machine and Freezer
Complete commercial kitchen facility
Dining Room Mock-up
Silverware
Chinaware
Glassware
Linen

Career Field: Food Service

Course: APPLIED COOKING I (SHORT)

Catalogue No.: J-800-04/CH   Course Date: 1/26/68

Course Description:

This short course is designed to train students in the proper preparation and cooking of soups, vegetables, and salads.

Comments:

A complete commercial kitchen facility is mandatory when this course is utilized.

Course Content:

Blocks		Hours
I	Introduction	1
II	Procedures, Terms and Recipes	1 1/2
III	Vegetables and Vegetable Cookery	3
IV	Soup Preparation	1 1/2
V	Salads and Dressings	1
VI	Tuesday's Menu	7 1/2
VII	Wednesday's Menu	7 1/2
VIII	Thursday's Menu	7 1/2
IX	Review and Examination	3 1/2
X	Friday's Menu	5
	TOTAL	39

APPLIED COOKING I (Cont'd)

Support Materials:

1. Instructor materials include lesson plans and examinations totaling 89 pages.

2. Student materials include review material totaling 4 pages, plus Government Printing Office documents.

3. Four color films totaling 79 minutes.
   One black and white film totaling 12 minutes.

Equipment:

Aprons (1 per student per day)
Hats (1 per student per day)
16mm motion picture projector
Movie Screen
Easel
Pointer

Career Field: Food Service

Course: APPLIED COOKING II (SHORT)

Catalogue No.: J-800-0423/CH Course Date: 6/12/73

Course Description:

This short course is designed to train students in the preparation and cooking of meats, poultry, seafood, eggs, gravy and sauces, and beverages.

Comments:

A complete commercial kitchen complex is required to present this course.

Course Content:

Blocks		Hours
I	Introduction	1
II	Cooking Procedures, Terms, and Recipes	1 1/2
III	Progressive Cooking	2
IV	Egg Cookery	1 1/2
V	Spices, Herbs and Flavorings Used with High Protein Foods	1 1/2
VI	Beverage Preparation	1
VII	Tuesday's Entrees	7 1/2
VIII	Wednesday's Entrees	7 1/2
IX	Thursday's Entrees	7 1/2
X	Review and Examination	3
XI	Friday's Entrees	5 1/2
	TOTAL	39 1/2

Support Materials:

1. Instructor materials include lesson plans and examinations totaling 89 pages.

2. Student materials include review material totaling six pages, and Government Printing Office documents.

3. Five color films totaling 128 minutes.
   One black and white film totaling 30 minutes.

Equipment:

Aprons (one per student per day)
Hats (one per student per day)
16mm motion picture projector
Movie screen
Projector stand
Chalkboard
Podium

Career Field: Food Service

Course: APPLIED BAKING (SHORT)

Catalogue No.: J-800-044/CH Course Date: 2/28/67

Course Description:

This short course is designed to train students in the preparation of simple desserts, cakes and cake icings, cookies, pies, and yeast dough products, including sweet dough.

Comments:

A complete commercial kitchen facility is necessary to present this course.

Course Content:

Blocks		Hours
I	Introduction	1
II	Bakery Equipment, Operation, Care and Safety Precautions	1
III	Desserts, Cakes, and Cake Icings	1
IV	General Principles of Cookie Manufacture	1
V	General Principles of Pastry Preparation and Pie Fillings	1
VI	General Principles of Yeast and Sweet Dough Preparation	1
VII	Tuesday's Menu	7 1/2
VIII	Wednesday's Menu	7 1/2
IX	Thursday's Menu	7 1/2
X	Review and Examination	5

APPLIED BAKING (Cont'd)

XI Friday's Menu		5
	TOTAL	56 1/2

Support Materials:

1. Instructor materials include lesson plans and examinations totaling 89 pages.
2. Student materials include planned instruction and review totaling 66 pages, plus Government Printing Office documents.
3. Three color films totaling 77 minutes.
   One black and white film totaling 11 minutes.

Equipment:

Aprons (one per student per day)
Hats (one per student per day)
16mm motion picture projector
Movie screen
Projector stand
Chalkboard
Podium

Career Field: Food Service

Course: NUTRITION AND MENU PLANNING (SHORT)

Catalogue No.: J-800-041/CH Course Date: 2/28/67

Course Description:

This short course is designed to train students to plan and construct menus for properly balanced, attractive and tasty meals.

Course Content:

Blocks		Hours
I	Introduction	1
II	Nutrition and Classification of Food	7 1/2
III	Menu Planning	6
IV	Writing and Analysis of a Menu	17 1/2
V	Review and Examination	3
	TOTAL	35

Support Materials:

1. Instructor materials include lesson plans and examinations totaling 214 pages.
2. Student materials include planned instruction totaling 95 pages, and Government Printing Office publications.
3. Six color films totaling 127 minutes.
   Two black and white films totaling 30 minutes.

Equipment:

16mm motion picture projector
movie screen
Easel
Pointer

Career Field: Food Service

Course: SANITATION AND BASIC MATHEMATICS (SHORT)

Catalogue No.: J-800-0040/CH Course Date: 11/4/74

Course Description:

This short course is designed to train students in proper sanitation procedures to be used in places of food preparation, and to familiarize them with mathematical formulas and equations required for the efficient operation of food service spaces.

Course Content:

Blocks		Hours
I	Introduction	1 1/2
II	Standard Organization and Functions	3/4
III	Sanitary Precautions For Food Service Personnel	7 1/2
IV	Basic Mathematics	6 3/4
V	Computation of Storage Spaces	5 1/4
VI	Review and Examination	2 1/4
	TOTAL	24

Support Materials:

1. Instructor materials include lesson plans and examinations totaling 214 pages.
2. Student materials include planned instruction and review totaling 106 pages, and Government Printing Office publications.
3. Six color films totaling 135 minutes.
   Nine black and white films totaling 169 minutes.

SANITATION AND BASIC MATHEMATICS (Cont'd)

Equipment:

16mm movie projector
Movie screen
Chalkboard
Podium

Career Field: Graphic Arts

Course: PHOTOGRAPHER (BASIC)

Catalogue No.: C-400-2011/P Course Date: 10/9/73

Course Description:

This course is designed to prepare students to produce, with minimal supervision, routine black-and-white still photographs and to provide on-the-job training in other basic equipment, materials, and procedures related to general and commercial photography.

Comments:

By mid-1975 this course will be completely self-paced and individualized. Estimated average time is 400 instruction periods, a total course length of 11 weeks. Conventional instruction would require an estimated 529 instruction periods or 441 contact hours, a total course length of 13.2 weeks.

Course Content:

Blocks		Hours
I	Basic Photographic Theory	41
II	Camera Operations	25
III	Laboratory Functions	14
IV	Photographic Techniques	150
V	Applied Sensitometry	26
VI	Motion Picture Photography	57
VII	Information and Release Photography	100
VIII	Color photography	46
IX	Aerial Photographic Laboratory Support	26
	TOTAL	465

Support Materials:

1. Instructor materials total 86 pages.
2. Student materials include narrative, planned instruction, and other materials totaling 7,200 pages.
3. Nine 8mm commercial black and white films totaling 460 minutes.
   Five 8mm commercial color films totaling 295 minutes.
4. 559 35mm slides
   647 sound-on-slide frames
   20 tape cassettes totaling 861 minutes

Equipment: (equivalents may be used)

Gralab timer, model 168
Electronic timer, model TM-566R
Craig motion editor
16mm 70KRM KP-9B camera
Graflex super graphic press camera, 4 x 5
Still view camera, 4 x 5, Graflex, back, mod view II
Leica 35mm kit camera M2S
Polaroid view/copy industrial camera KS77A (MP3XL)
Repronar slide copy camera, model 805
Photo chemical mixing tank, 25 gal., model JM25
Chromega projection printer, Simmons Omega D-4, 404-209 P/N
Type A-2 dry mount press
Model 11 color processing unit (E.K. Co.)
Type AR-6 plotting table
Model P/N 1037 Pro Junior tripod with case
KE-51A still picture camera
Type EN-6A continuous strip contact printer
EH-38C film processing machine
EH-66A film processing machine
Device 4-A-9 Kodak Carousel slide projector
Device 4A18 16mm sound projector
Motion picture projection screen, 60" x 84"
Photo transformer voltage regulator
Phillips Norelco Model 2021 audiovisual unit
Phillips Norelco Model TE 901 frame pulse generator
Kodak Supermatic 60 Super 8mm projector
Kodak Model 101 Sensitometer
Stroboflash II electronic photo flash
Top-Cor automatic 35mm lens, f/2.8

PHOTOGRAPHER (BASIC)   (Cont'd)

Top-Cor automatic 58mm lens, f/1.8
Pakonomy 26W glossy photo print drier
Carrying case, Beseler TopCon, Halliburton
Model 153 photo chemical holding tank, 50 gal.
25 gal. plastic Versamat Replenisher photo chemical tank
Lenz model 40-S print washer
B-22 projection printer without lens
Model D2V projection printer
50mm focal length lens, with lens board for B-22 printer
Model 625 3M sound on slide responder
Model 625 AGF standard sound on slide projector player
Model 625 AGF 3M sound on slide projector/recorder
Model 625 AA 3M sound on page standard player
3M sound on page master recorder
3M sound on page audio printer
Kodak Supermatic 70 recorder
Model 72 Beckman pH meter
Caramate recorder model 8806
Mamiya still camera model C-3
Type EN-50A contact printer
45W Thomas duplex sodium vapor safelight
MacBeth TD-102 transmission densitometer
3M sound page audio headphones

Career Field: Graphic Arts

Course: PHOTOGRAPHER'S MATE (INTERMEDIATE)

Catalogue No.: C-400-2012/P Course Date: 10/12/73

Course Description:

This course is designed to prepare students for technical management and supervision of photographic laboratories by providing indepth training in administration, management, and the technical aspects of photography.

Comments:

By mid-1976 this will be a self-paced, individualized instructional system. Estimated training time is 587 periods (489 contact hours), or 14.7 weeks.

Course Content:

Blocks		Hours
I	Photographic laboratory support	130
II	Studio (illustrative and portrait) photography	60
III	The color process	60
IV	Motion pictures	90
V	Photographic news support	85
VI	Audiovisual presentations	120
	TOTAL	545

Support Materials:

1. Instructor materials total 38 pages.
2. Student materials total 5,040 pages.
3. Twelve commercial black and white 8mm films totaling

600 minutes.
Eight commercial color 8mm films totaling 425 minutes.

4. 798 35mm slides
360 sound-on-slide frames
11 tape cassettes totaling 180 minutes

Equipment: (equivalents may be used)

Camera, still picture, duplication, Repronar 805
Tank, mixing/storage, Pako JM-25
Printer, projection, color, Super Chromega D4
Camera, still picture, 4 x 5, Supergraphic
Safelight, darkroom, photographic, 8 x 10, semi-cylindrical
Press, dry mount, type A-2
Viewer, motion picture, 16mm, Craig KE-16
Tank, processing, photographic, 16 oz., Nikor 2240
Washer, photo print, rotary, Pakowasher, Pakolux M3
Easel, projection printing, adjustable, 11 x 14
Reel, processing, photographic, 35mm, Nikor
Lamp, studio, spot, LS-5
Tripod, Photographic, Studio, TS2
Table, plotting, aerial, type AR-6
Timer, interval, Dimco Gray Co. Ref. 168 Gralab
Camera, still picture, 4 x 5, Graphic View 2
Printer, Projection, Simmons Omega D2V
Sink, photographic, processing, FM-112A
Camera, 70 KRM, 16mm
Camera, still picture, 35mm, Leica M4
Camera, still picture, Polaroid MP3XL
Densitometer, MacBeth, Model TD-203AM
Processor, aerial color film, Kodak model 1411 (EH-73)
Mixer, 55 gal., Pako Hydromixer, model 36-55
Processor, color print, Calumet 622A
Camera, still picture, 70mm, Beattie Portronic 907
Analyzer, color, MacBeth, NB500PA
Washer, roller transport, Rack, Versawash, model 54102A
Densitometer, transmission, color, digital readout, MacBeth TD 404
Printer, contact, EN-109 continuous type, 70mm to 9 1/2" roll film Colorado
Processor, film, roller transport, Kodak model 11C, EH-38C
Processor, roller transport, film, Kodak model 411C, EH-66
Printer, projection-contact, photographic, LogEtronics, model 11R5
Recorder/reproducer, stereo, reel/cassette, Sony model TC-330

Projector, MP, Kodak Pagenat, model 4A-1B
Mixer, chemical, portable, lightning model L, type M4E-1
Trimmer, paper, drop knife, 24" x 24", Milton Bradley Co. model #5024
Lighting set, photographic, studio, Ascor 700
Camera, still picture, 2 1/4 x 2 1/4, roll film, KS-111A Mamiya C-33
Filter, photographic, Darkroom, safelight series 13, 10 x 12
Camera, still, roll film, 2 1/4 x 2 1/4, KE-37A Rolleiflex
Meter, photographic exposure, Ranger 9
Holder, small, roll paper, background
Tripod, quick set, Sampson 7301
Feel, film, processing, photographic, roll film, 120 Nikor
Table, studio
Tank, film processing, 64 oz., Nikor
Mixer, portable, lightning with stainless steel shaft and propeller, Leedal model M-25
Meter, flash, Calumet model M-100
Portable lighting outfit, Graflex 500 MG
Table, studio, photographic, adjustable chair and stool, Adjustrite
Box, shadow, photographic light
Bench, posing photographic, chaise studio model martin
Stand, light, Burke and James, model BR-4
Timer, electronic, Omega, Precision II
Typewriter, Manual/electric model 250 Smith-Corona
Drier, film, cabinet, model III, ADC-19
Press, slide mount, hot, 115V AC, with PL-I foot switch, Seary model II
Cutter, film, triple purpose, 35mm, Seary model 11B
Dehumidifier, room, portable, 115V, 60 cycle, Dayton model 4H644A
Meter, light, Spectra professional P-251
Meter, hydrogen ion, Beckman Seromatic SS-3
Tripod, motion picture, model #7301
Stand, projector, 16mm
Rewinds, film
Stools, editing
Stands, light, portable
Table, editing, 42" x 24"
Camera, kit, Arriflex model 163
Belt, power, Cine 60
Recirculator, water, high temperature, water jacket, Hi-temp recirculator, Calumet model 70W
Sensitometer, process, Kodak model 101

PHOTOGRAPHER'S MATE (INTERMEDIATE) (Cont'd)

Processor, stabilization type, Kodak Ektamatic, model 214K
Lamp, Studio, baby combo, Mole Richardson 751
Splicer, film, 16-35mm
Flash unit, Stroboflash II
Flash unit, repeating, Graflex Stroboflash IV
Honeywell Pentex Spotmatic
Lens, wide angle, with viewfinder, Leica camera 21MM Super Angulon
Lens, 135mm, Elmarit f/2.8 for Leica
Viewfinder, optical, Bright-line, for 21mm lens
Tripod, photographic, Table model with ball and socket, Leica
Close-up viewing system, Visoflex III
Bellows, focusing, Leica
Lens, 10mm f/1.8, T2, Cinegon, for 16mm Arriflex 16S
Lens, 16mm f/2, T2.2, Cinegon, for 16mm Arriflex 16S
Lens, 28mm, f/2 T2.2, Cine Xenon, for 16mm Arriflex 16S
Lens, 12mm, to 120mm, f/2.2, Angenieux, model 120, for Arriflex
Magazine, film, 16mm, 40 ft., for Arriflex 16S
Dust and static removal unit, 10", Kodak model A2-K
Printer, projection, 2 1/4 x 2 1/4 photographic model B-22
Densitometer, reflection, model RD 219, MacBeth
Processor, film, color, Calumet model 715
Nitrogen burst regulator, pressure gauge and regulator, with 10 ft. of hose, model No. NC-8
Boom, studio, type MR-75W Mole-Richardson
Easel, photographic, multi-size, Saunders model PR810
Viewer, color print, Avalite model R-240
Compressor, air, non-portable, model SYCT54-1
Holder, roll paper, roll easy background, k08" model W
Carrel, study, single faced, type LB472
Supermatic 60 sound projector
Projector, still, sound on slide, model 625AGF
Headphone, for use with 625AGF
Player, sound/page #m, model 626AA with headphones
Player, cassette, portable, DC battery operated, Rheem Co., model AV10
Player, cassette, portable, 115V AC, Rheem Co., AV15
Headphone, model 2917, for use with caliphone Cassette player
Craig Pro-editor/viewer model V-4643
Cabinet, slide, storage, Abodia 5000 visual
Planning boards for layout
Control system, multi-media, Media Master 1200, audiovisual control system 1200
Synchronizer, sound, Carousel, Kodak model 2

PHOTOGRAPHER'S MATE (INTERMEDIATE)   (Cont'd)

Illuminator, slide
Dissolve control, Kodak model 2
Projector, still, Kodak Ektagraphic, model AF2
Tech proof printer, Mfg: Brandom, Inc.
Speed Easel, 4-way Mfg.: Air Equip. Corp.
Tech proofer, 35mm
Safelight, Thomas, photographic darkroom, Quartz, Sodium-vapor discharge tube, Thomas
Tank, mixing and storing, 5 gal. capacity, Polyethylene, with faucet
Drier, air impingement Mfg: Arkay Corp., 228 S. 1st St., Milwaukee, Wisc.
Lamp, studio flood, portable, 1000 watt, Quartz iodine lamp, Colortran No. 96001-65
Media Master 375, multimedia programmer

Career Field: Graphic Arts

Course: MOTION PICTURE PHOTOGRAPHER (ADVANCED)

Catalogue No.: C-400-3010/P   Course Date: 10/12/75

Course Description:

This course is designed to train photographers to operate professional motion picture cameras, including single-system and double-system sound cameras, and to apply standard motion-picture shooting techniques to obtain film coverage for use in audio-visual productions.

Comments:

This is a group-paced, individualized instruction system. Estimated average time is 367 instruction periods, a total course length of 9.2 weeks. Conventional instruction would require an estimated 423 periods, a total course length of 10.6 weeks, representing 352 contact hours.

Course Content:

Blocks		Hours
I	Motion Picture Production	90
II	Motion Picture Studio Production	60
III	Sound Production	273
	TOTAL	423

Support Materials:

1. Instructor materials total 11 pages.
2. Student materials total 1,200 pages.
3. One black and white film totaling 1.5 minutes.

MOTION PICTURE PHOTOGRAPHER (Cont'd)

Equipment:

Viewer, movie, 16mm, film, RE-16
Lamp, Colortran quartz
Tripod, MP, friction, model TM-6 and model TM-2
Wall-mounted projection screen
35mm still slide projector
16mm sound motion picture projector 4A18
8' x 10' motion picture projection screen
Slide player, AGF
Page player, AGF
Unidirectional dynamic microphone
Lavalier microphone
Vari-impedence microphone
Pro H/D tripod
Portable hot 16mm motion picture splicer
Crab dolly
Solar spot midget lamp, 100/200W
Caramate slide projector
Magnetic erasing pencil
Film and tape degausser
Densi photometer
16mm sound motion picture camera with accessories (Arriflex
  502-009, 571-023, 503-020, 501-021)
Angenieux vari-focal zoom lens, 12-120mm with accessories
16mm x 400' magazine
Vari-speed motor
Synchronous 24V motor
Single frame mechanism
Battery power supply
Magnetic tape viewer
Motion picture editing barrel with accessories
Motion picture editing table
Studio production equipment:
  public address amplifier
  Ampex speaker amplifier
  Ampex amplifier model 351
Audio equipment test rack:
  Amplifier
  Test tape magnetic equipment alignment film
  Gain set
  Noise, flutter, and distortion meter, type 63
  Oscillator
  Oscilloscope
  Component rack
  Pull-out ...
  Speaker

MOTION PICTURE PHOTOGRAPHER (Cont'd)

Sound ear phones
Fishpole microphone
Magnetic tape splicer, 1/4"
Focus type sungun light with PBS-30 battery
16mm motion picture splicer, butt and diagonal, guillotine
Photo exposure meter
Speaker
4-gang 16/35mm motion picture rewinds
Microphone
Diagonal 16mm magnetic film splicer
16/16 double system sound projector
16mm magnetic sound reader/viewer
Titler, motion picture, tabletop, 16/35
30" x 30" reflectors, set, with stands
Model W collapsible dolly
Stand, century, flags, etc.
Tega wide angle lens, 5.7mm, f/1.8
Densi-transmission light source
Recording and mixing equipment, sound booth, motion picture, 16mm:
  Audio amplifier, model 1568A
  Magnetic amplifier, model 68
  Cabinet, model C-400
  Table top mixing console
  Control unit projector, model PJ-16mm
  Selsyn power supply distributor
  Slate microphone, model 615
  Line input mixer, BM II
  Preamplifier, sound, BS Nagra
  Motion picture projector, 16mm, sound
  Power supply console, model 55A
  Magnetic sound recorder, model MR-414
  Magnetic sound reproducer, model MB-414
  Transfer resolver, model SLP-64565
  Sound speed adjuster (Nagra)
  Empire turntable, model 488
Magnetic reader/viewer
16mm single system sound stripe
Sturdy friction motion picture tripod
Tape recorder, 1/4"
Single set 16/35mm motion picture rewinds
Fluid head tripod
Studio set backdrop
Rear projection screen

Career Field: Graphic Arts

Course: PHOTOGRAPHIC EQUIPMENT REPAIR (ADVANCED)

Catalogue No.: C-670-2012/F Course Date: 10/9/75

Course Description:

This course trains students to perform intermediate maintenance on representative photographic equipment, including aerial and ground cameras.

Comments:

By mid-1976 this will be a completely self-paced, individualized instruction system. Estimated average time is 496 instruction periods, a total course length of 12.4 weeks. Conventional instruction would require an estimated 551 instruction periods, or 459 contact hours, a total course length of 13.8 weeks.

Course Content:

Blocks		Hours
I	Repair and Maintenance Requisites	75
II	Basic Photographic Equipment	222
III	Advanced Mechanical Devices	143
IV	Electromechanical Equipment	111
	TOTAL	551

Support Materials:

1. Instructor materials total 2,200 pages.
2. Student materials total 1,444 pages.
3. Five black and white films totaling 285 minutes
4. 250 slides

PHOTOGRAPHIC EQUIPMENT REPAIR (Cont'd)

Equipment:

A/C camera test set
Stroboscope
Generator, 28V output
Shutter, B-2 Rapidyne
Electronic flash
35mm still camera
Silent 16mm motion picture camera
Still camera
A/C Recon camera, 7" x 7"
A/C body drive camera 9" x 9"
Still press camera, 4 x 5
A/C lens cone, 6"
A/C lens cone, 12"
A/C magazine, 7" x 7"
A/C lens cone, 24"
A/C magazine, 9" x 9"
1/2" drill press
Air compressor
10" tool lathe
A/C Recon camera
Still camera
Aerial camera
35mm still camera, TopCon
A/C Recon camera
Continuous printer
Processing machine
Camera test set
Simpson 160 multimeter
1/4 hp grinder
Sound motion picture projector, 16mm
115V cassette tape player
Cassette tape player
Eastman Kodak special camera tool kit
Bell & Howell camera tool kit
Graflex special camera tool kit
Graflex shutter (cat. no. 5806)
Seikosha shutter
Ultrasonic washer
Photoflash synchronizer tester
Slide player
Page player
Collimator
Comparascope
Standard light value

PHOTOGRAPHIC EQUIPMENT REPAIR (Cont'd)

Caramate slide projector
Super 8 Sound cartridge projector
Test set for aerial camera
Magazine, lens cone, and drive module (for aerial camera)

Career Field: Instrument Repair

Course: INSTRUMENTMAN (Basic)

Catalogue No.: A-670-0010/GL Course Date: 11/15/70

Course Description:

This course is designed to prepare students to service and maintain mechanical typewriters, and to operate, maintain, repair, adjust, and calibrate temperature, pressure, volumetric, rotational speed, torque, vacuum, flatness and linear measuring instruments, using common hand, power, and precision measuring tools.

Comments:

This course is a modularized, fully individualized, course-system through which students proceed at their own pace.

Course Content:

Blocks		Hours
I	Introduction	2
II	Office Machines	229
III	Mechanical Instrument Repair and Calibration	303
IV	Review and Evaluation	59
	TOTAL	593

Support Materials:

1. Instructor materials include a curriculum guide totaling 190 pages.

2. Student materials include 2,393 pages of locally prepared materials.

3. 4 Charts
   3 Mockups
   1 Display board

INSTRUMENTMAN (Basic) (Cont'd)

Equipment:

General purpose hand tools
Bench grinder
Propane torch
Typewriter repair tool kit
Typewriter cleaning machine
Typewriter dip tank
Air gun and pick-up hose
Remington Model 24 typewriter
Royal model 470 typewriter
Gauge repair tool kit
Low pressure panel and manometers
Vacuum pumps
Wallace and Tiernan FA-235 portable pressure standard
Ashcroft 0-15 PSI gauge
Ashcroft 30" HG vacuum gauge
Weksler 0-30"-100 PSI compound gauge
Barton 226 differential pressure gauge
Barton 247 differential pressure gauge
Mansfield and Greene PK-650 pressure standard
Wallace and Tiernan absolute pressure gauge FA-160
Wallace and Tiernan FA-185 barometer
Maxitest (Ashcroft) standard gauges
Magnavac electronic vacuum gauge
0-40-100 PSI retard gauge (Ashcroft)
Nitrogen boost pump
King 3460 standard gauges, fluid separators
Seegars 0-3000 PSI gauge
Portable gas intensifier
Environmental test chamber
High pressure panel
Low and medium pressure panel
Ultra sonic cleaner (Bronson)
Ultrasonic cleaner (Westinghouse)
Gauge purging system
Ultraviolet light
0-200 PSI simplex gauge
Mansfield and Greene T-1 pump
Mansfield and Greene dead weight tester
Mansfield and Greene R-100 pump
Amthor bi-fluid dead weight tester
Hydraulic panel
0-100 PSI maxitest standard
0-100 PSI Ashcroft duplex gauge
0-200 PSI Ashcroft duplex gauge
Mechanical loader

INSTRUMENTMAN (Basic) (Cont'd)

ET 1000-F torque tester
ET 2250-P torque tester
ET 600Z torque tester
Flexible beam torque wrench
Audible torque wrench
Audible torque screwdriver
Dial indicating torque wrench
Calibration weight set
Ideal aerosmith tachometer tester
Quantum dynamics tachometer tester
Model 4800 Jones Motorola tachometer
Model S-2 Jones Motorola tachometer
Virbating reed tachometer
Chronometeric tachometer
ICBPA multiple range portable hand held tachometer
Positive displacement flowmeter
Turbine flowmeter
Variable area flowmeters
Yarway indicator
Model 10 levelometer
Liquidometer
King gauge
Manometers
High temperature bath
Medium temperature bath
Low temperature bath
Millivolt potentiometer
Wheatstone bridge
Ice bath equipment
ASTM thermometers
Resistance thermometers
Distant reading thermometers
Speedo-Max H
Speedo-Max G

Career Field: Instrument Repair

Course: WATCH AND CLOCK REPAIR (BASIC)

Catalogue No.: A-670-0011/GL   Course Date: 6/15/70

Course Description:

This course furnishes the basic technical knowledge and practical skills needed to effectively disassemble, clean, reassemble, and adjust clocks, watches and chronographs with all types of mechanical and electrical movement. It also includes the manufacture of some parts needed to repair clocks and watches.

Comments:

Although this is considered to be a "lock-stepped" course, the Navy follows this procedure: explanation, instructor completes project with students observing, instructor and student accomplish project together, and, finally, student accomplishes project under instructor's supervision.

Course Content:

Blocks		Hours
I	Evaluation of trainee knowledge of basic watch repair techniques	5
II	Watchmaker's tools and their uses	238
	TOTAL	243

Support Materials:

1. Instructor materials include a curriculum guide totaling 58 pages.
2. Student materials include locally prepared materials totaling 301 pages.
3. 1 commercial color film totaling 60 minutes.
   1 commercial black and white film totaling 60 minutes.

WATCH AND CLOCK REPAIR (Cont'd)

4. 4 Charts

Equipment:

Lathe (watchmakers)
Staking set
Jeweling set
Cleaning machine
Timing machine
Chelsea clock
Hamilton Comparing Watch
Elgin Timer
Valjoux Timer
Motion picture projector
Projector screen

Career Field: Instrument Repair

Course: OPTICALMAN (Basic)

Catalogue No.: A-670-0018/GL Course Date: 1/15/68

Course Description:

This course trains students in maintaining, repairing, and overhauling binoculars, alidades, azimuth and bearing circles, sextants, telescopes, turret and submarine periscopes, rangefinders, magnetic compasses, and other optical devices.

Comments:

This course is an individualized, self-paced design, consequently the 648 hours shown in the course content represents a maximum. Average time for completion is 490 hours.

Course Content:

Blocks		Hours
I	Introduction	5
II	Basic Mathematics	40
III	Handtools and Measuring Instruments	24
IV	Drills and Drilling Machines	11
V	Grinders	24
VI	Basic Lathe Operation	62
VII	Basic Milling Machine Operation	32
VIII	Maintenance and Material Management	2
IX	Fundamentals of Optics	80
X	Optical Instrument Components	7
XI	Optical Instrument Repair	43

OPTICALMAN (Basic) (Cont'd)

XII	Lens Cementing and Painting	32
XIII	Primary Telescopes	78
XIV	Navigational Instruments	200
XV	Review and Final Examination	8
	TOTAL	648

Support Materials:

1. Instructor materials include a curriculum guide and examinations totaling 304 pages.
2. Student materials include locally prepared materials totaling 1,794 pages, 8 commercial texts and Government Printing Office documents.
3. 12 black and white films totaling 225 minutes.
   3 commercial black and white films totaling 90 minutes.
4. 10 wall charts

Mock-ups and Training Aids:

Bench grinder
Tool bits
Micrometer
Lathe carriage
Various charts for decimal equivalency and how to read
  various instruments
Dynometer
Binoculars
Alidades
Prisms
Lenses
Eye pieces
Magnetic board
Filters
Gear set ups
Ships telescopes
Rangefinder
Ships binoculars
Alidades

OPTICALMAN (Cont'd)

- Sextants
- Various mounts (optical)
- Gunsights
- OOD spyglasses
- Stadimeters
- Azimuth circles
- Bearing circles
- Binoculars

Equipment:

- Basic handtools
- Drill presses
- Power hacksaw
- Lathes
- Milling machines
- Oxyacetylene rig
- Welding rig
- Taps and dies
- Measuring instruments
- Various stock
- Optical bench with accessories
- Carbon arc light source
- Fiber optics demonstrator
- Ray tracing kit
- Hertle disc with light source
- Physical optics kit
- Special greases
- Nitrogen charging rig. Sealing wax
- Auxiliary telescopes
- Lens centering instrument
- Special tools for various instruments
- MK 4 Collimator with accessories
- MK 5 Collimator with accessories
- Hot plates
- Bell jars
- All optical instruments listed in Training Aids section

Career Field: Instrument Repair

Course: ADDING MACHINE AND ELECTRIC TYPEWRITER REPAIRMAN (BASIC)

Catalogue No.: A-670-0012/GL **Course Date:** 12/15/70

Course Description:

This course is designed to train students to test, troubleshoot, repair, overhaul, and adjust Burroughs and Remington adding machines and IBM electric typewriters. The course "Instrumentman Basic" is a prerequisite to this curriculum.

Comments:

This course is completely modularized, consequently each block dealing with a particular machine can be taught as an individual unit.

Course Content:

Blocks		Hours
I	Introduction	5
II	Maintenance and Material Management	8
III	Burroughs Adding Machine (A670-0030)	187.5
IV	Remington Adding Machine (4-5 A670-0031)	187.5
V	IBM Electric Typewriter (Selectric A-670-0028)	112
VI	IBM Electric Typewriter (C-1 A670-0029)	75
	TOTAL	575

Support Materials:

1. Instructor materials include a curriculum guide totaling 109 pages.
2. Student materials include locally prepared material

ADDING MACHINE AND ELECTRIC TYPEWRITER REPAIRMAN (Cont'd)

totaling 728 pages, plus commercial material.

3. 9 commercial audio-cassette tapes totaling 40 minutes.

Equipment:

Cassette recorder set
Remington adders
IBM Selectric typewriters
IBM C-1 electric typewriters
Burroughs adders

Career Field: Management Science

Course: MANAGEMENT ANALYST (ADVANCED)

Catalogue No.: S-5000029/N Course Date: 3/20/73

Course Description:

This course is designed to train students in the methods and techniques of management engineering to enable them to perform as analysts in manpower surveys and work simplification programs.

Course Content:

Blocks		Hours
I	Applied Statistics	60
II	Human Factors - Engineering	12
III	Work Measurement	30
IV	Methods Study (Pert) (cert)	30
V	Manpower Standards	36
VI	Manpower Planning	30
VII	Presentations (Graphics)	6
VIII	Field Exercise	60
	TOTAL	- 264

Support Materials:

1. Instructor materials include lesson plans, curriculum guide, and tests totaling 653 pages.
2. Student materials include handouts, exercise sheets, and case studies totaling 900 pages.
3. One black and white film totaling 15 minutes.
   Twenty-one color films totaling 425 minutes.
   Two commercial color films totaling 45 minutes.

Fourteen commercial black and white films totaling 225 minutes.

4. 300 35mm slides
300 Transparencies

Equipment:

Overhead projector
35mm slide projector
Projection screen
16mm Motion Picture Projects

Career Field: Management Science

Course: MANAGEMENT AND SUPERVISION (SHORT)

Catalogue No.: A-012-0028/N **Course Date:** 11/15/73

Course Description:

This short course is designed to develop proper attitudes, managerial skills, and leadership concepts to carry out supervisory duties.

Course Content:

Blocks		Hours
I	Introduction	3
II	Management of the Communication Process	9
III	Understanding the Managerial Process	31
IV	Motivation and Human Behavior	13
V	Responsibilities in Personnel Management	11
VI	Critique	3
	TOTAL	70

Support Materials:

1. Instructor materials include a curriculum guide and lesson plans totaling 142 pages.
2. Student materials include three Government Printing Office documents, five commercial texts, and handouts and class notes totaling 145 pages.
3. Twenty-five commercial color films totaling 635 minutes. two commercial black and white films totaling 53 minutes.
4. 100 Flock Cards
   10 Transparencies

MANAGEMENT AND SUPERVISION (Cont'd)

5. One commercial audio/tape answer book, programmed lesson package.

Equipment:

16mm Motion Picture Projector
Overhead Projector
Tape Player
Projection Screen

Career Field: Marine Science

Course: CARGO HANDLING (Phase I and II) (SPECIAL)

Catalogue No.: A-551-0068/0 Course Date: 6/15/73

Course Description:

Course includes determination of safe working loads, nomenclature and use of cargo handling gear, ship safety, practical training in the use of booms, blocks and other cargo handling devices and the splicing of both wire and fiber rope. In Block II, practical experience is gained in all phases of cargo handling and stowage along with extensive instruction in the operation of forklifts and other dockside vehicles and equipment.

Comments:

In the Navy this course is taught aboard the USS Calvert, an old (PA) cargo vessel. A similar vessel would have to be available to teach this curriculum.

Course Content:

Blocks		Hours
	Phase I	
I	Orientation	2
II	Methods of determining safe working loads	6
III	Underway replenishment	4
IV	Nomenclature of cargo handling gear	1
V	Analysis of rigging methods	1
VI	Stresses and strains on cargo handling gear	2
VII	Safety aboard ship	1
VIII	Practical training in use of cargo gear	13

CARGO HANDLING (Cont'd)

IX	Splicing	4
	TOTAL Phase I	33
	Phase II	
I	Orientation	3
II	Use of rope in cargo handling	6
III	Cargo handling gear	12
IV	Variation in cargo handling techniques	5
V	Cargo stowage	4
VI	Rigging and operation of cargo handling gear	16
VII	Operation and maintenance of electric and gas forklifts	18
	TOTAL Phase II	64

Support Materials:

1. Instructor materials total approximately 800 pages.
2. Student materials total approximately 600 pages.
3. 200 transparencies
   155 charts
   131 slides
4. Eight black and white 16mm films totaling 130 minutes.
   One color film totaling 20 minutes.

Equipment:

Movie projector and screen
Slide projector
Overhead projector
Rigging
Marlin Spike

CARGO HANDLING (Cont'd)

Wire Cutters
Seizing Wire
Wire rope
Tape
Plimsoll mark board
Draft mark boards with stand
Rigging vise
Friction tape
Forklift trucks
Forklift pallets
Trailers
Palletized drums
Dummy cargo
Riber rope

Career Field: Marine Science (Engineering)

Course: PROPULSION ENGINEER (Basic)

Catalogue No.: A-650-0013/GL Course Date: 6/15/74

Course Description:

This course is designed to train students in the identification, use, and operating principles of common types of marine engineering system components and component parts used in a shipboard propulsion plant.

Comments:

This course of instruction is a modularized, multi-media, self-paced learning system in which students learn at their own pace, selecting and using the media they prefer or need to progress through each part of the course. The watch-station portions of the course system require the availability of typical sea-going, steam-driven and diesel-driven vessels or mock-ups of the engine rooms on such vessels. The theory portions of each block can be presented without the "watch" portions on a totally viable basis.

Course Content:

Blocks		Hours
I	Propulsion Engineering Components and Component Parts	120
II	600 PSI Steam Propulsion Plant Operator: Fireroom Watch Station Indoctrination	120
III	600 PSI Steam Propulsion Plant Operator: Engineroom Watch Station Indoctrination	120
IV	Diesel Engine Maintenance Training and Diesel Propulsion Plant Watch Station Indoctrination	120
	TOTAL	480

PROPULSION ENGINEER (Basic) (Cont'd)

Support Materials:

1. Instructor materials include a curriculum guide totaling 303 pages.
2. Student materials include locally prepared materials totaling 6,332 pages.
3. 1,658 Slides
   82 Audio cassettes totaling 805 minutes.

Equipment:

Complete steam-driven and diesel-driver mock-up engine rooms to teach "watchkeeping" practice portions of the course.
Audio-tape players
35mm slide projectors

Career Field: Marine Science (Engineering)

Course: MAINTENANCE OF WOODWARD ELECTRIC GOVERNOR SYSTEM EG-A (SPECIAL)

Catalogue No.: A-652-0062/N Course Date: 7/15/73

Course Description:

This short course provides students with the training to perform maintenance and repairs on shipboard systems using the EG-A Woodward Electric Governor.

Comments:

Approximately 80% of all governors used in commercial vessels and in industry are Woodwards. This model (EG-A) is the basic Woodward System. Prerequisite is the Navy Basic Electricity and Electronics course or equivalant.

Course Content:

Blocks		Hours
I	Introduction	2
II	The Controlled System	1
III	Speed Governor Fundamentals	1
IV	Oils for Use in Hydraulic Actuators	1
V	Basic Hydraulics	2
VI	Basic Governors	2
VII	EG-B2C Actuator	2
VIII	EG-B10C Actuator	3
IX	Hydraulic Amplifiers	4
X	EG-A Control	1
XI	EG-A Inputs	3

XII	EG-A Outputs	3
XIII	Options and Accessories	3
XIV	EG-A System Adjustments and Troubleshooting	4
	TOTAL	32

Support Materials:

1. Instructor materials include tests and other printed materials totaling 175 pages.
2. Student materials include handouts and a trainee's guide totaling 175 pages.
3. Two black and white films totaling 40 minutes.
   One color film totaling 40 minutes.
4. 6 Charts
   25 Transparencies

Equipment:

EG-B10C actuator/governor
EG-B2C actuator/governor
EG-3C actuator
Hydraulic Amplifier (Servo Controlled)
Governor Tools
Woodward Governor/Actuator Test Stand and associated equipment
EG-A control box
EG-A spare parts
Integral actuator centering device
Overhead projector
Projection screen
Movie projector

Career Field: Marine Science (Engineering)

Course: WOODWARD ELECTRIC GOVERNOR MAINTENANCE SYSTEM 2301 (SPECIAL)

Catalogue No.: A-652-0064/N **Course Date:** 7/15/73

Course Description:

This short course is designed to train students to perform maintenance and repairs on Woodward Electric Governors System 2301.

Comments:

Approximately 80% of all governors used in commercial vessels and industry are Woodwards. Prerequisite is Navy Basic Electricity and Electronics course or equivalent.

Course Content:

Blocks		Hours
I	Introduction	2
II	The Controlled System	1
III	Speed Governor Fundamentals	2
IV	Oils for Use in Hydraulic Governors	1
V	Basic Hydraulics	
VI	Basic Governors	
VII	The EG-3P Actuator	3
VIII	The EG-B2P and Actuator	4
IX	Introduction to 2301 Electric Governor	1
X	Frequency Sensing Control	2
XI	2301 Load and Frequency Sensing Control	2
XII	2301 Load and Speed Sensing Control	3

WOODWARD ELECTRIC GOVERNOR MAINTENANCE SYSTEM 2301 (Cont'd)

XIII	Options and Accessories	8
	TOTAL	29

Support Materials:

1. Instructor materials include a curriculum guide, lesson plans, and examinations totaling 220 pages.

2. Student materials include Government Printing Office documents, commercial bulletins, and a trainee's guide totaling 175 pages.

3. One color film totaling 40 minutes.
   Two black and white films totaling 40 minutes.

4. 21 Transparencies

Equipment:

EQ-B10P Actuator
RG-B2P Actuator
EG-3P Actuator
EG-3P Actuator with integral amplifier
Governor tools
Woodward Governor/Actuator Test Stand and associated equipment
2301 Load and Speed Sensing Control Plate
2301 Load and Frequency Sensing Control Plate
Proportional Actuator Centering Device
Spare Plate Modules
Overhead projector
Slide projector
Projection screen
Motion picture projector

Career Field: Marine Science (Navigation)

Course: QUARTERMASTER (Basic)

Catalogue No.: A-061-0012/SD Course Date: 1/1/73

Course Description:

This course is designed to train students in standing watch as pilots of the watch, underway, with limited supervision.

Comments:

Procedures covered in this course are totally compatible with those utilized on commercial vessels and private yachts.

Course Content:

Blocks		Hours
I	Quartermaster of the Watch	3
II	Rules of the Road	4
III	Basic Navigation Definitions	1
IV	Navigation Arithmetic	26
V	Nautical Charts	9
VI	Navigation Publications	8
VII	Compass	6
VIII	Tide and Current	13
IX	Time	5
X	Weather	10
XI	Navigational Aids	3
XII	Plotting Application	7
	TOTAL	95

Support Materials:

1. Instructor materials include lesson plans, a curriculum guide, and examinations totaling 176 pages.
2. Student materials include forms, handouts, and a text totaling 310 pages.
3. 2 black and white films totaling 40 minutes.
4. 30 Transparencies

Equipment:

Chalkboard
Chalk
16mm motion picture projector
Overhead projector
Projection Screen
Parallel motion protractor
Navigator's kit case (compass and dividers)
Nautical Speed slide rule
Parallel rule
1 arm protractor
Pelorus stand
Azimuth circle
Navigation light trainer
Transparent globe
Barometer
Assorted nautical charts

Career Field: Marine Science (Navigation)

Course: FUNDAMENTALS OF MARINE NAVIGATION (ADVANCED)

Catalogue No.: J-2G-0602 and 0603/N **Course Date:** 7/30/74

Course Description:

This course provides training and practical experience in the fundamentals of marine navigation.

Comments:

Totally compatible with procedures used on commercial vessels and private yachts.

Course Content:

Blocks		Hours
I	Introduction	3
II	Introduction to Piloting	15
III	Piloting Procedures	15
IV	Review, Examination, and Critique	6
V	Introduction to Celestial Navigation	10
VI	Procedures for Celestial	11
VII	Practice in Celestial Navigation	18
VIII	Application and Critique	7
	TOTAL	85

Support Materials:

1. Instructor materials include pre-test, lesson plans, course outline, and post test totaling 282 pages.
2. Student materials include handouts and study guides totaling 81 pages.

3. Ten color films totaling 106 minutes.

4. 1 Chart
   272 Transparencies
   One audio tape totaling 60 minutes

Equipment:

12 large tables
Chalk Board
Chart Desk
Bookcase
Star Finders
Audio Tape Recorder
Overhead Projector
16mm Motion Picture Projector
Projector Screen
World Globe
Celestial Globe
Compass
Polaris
Azimuth circle
Gyro-Demonstration
Chart Projection Demonstration (Plan)
Sextant
Nautical sliderules
Compass trainer (large)

Career Field: Marine Science (Engineering)

Course: WOODWARD ELECTRIC GOVERNOR MAINTENANCE SYSTEM EG-M (SPECIAL)

Catalogue No.: A-652-0063/N Course Date: 7/15/73

Course Description:

This short course is designed to train students to perform maintenance and repairs on shipboard systems using EG-M Woodward electric governors.

Comments:

Approximately 80% of all governors used in commercial vessels and in industry are Woodwards. Prerequisite is the Navy Basic Electricity and Electronics course or equivalent.

Course Content:

Blocks		Hours
I	Introduction	2
II	The Controlled System	1
III	Speed Governor Fundamentals	1
IV	Oils for Use in Hydraulic Actuators	1
V	Basic Hydraulics	2
VI	Basic Governors	3
VII	EG-R Actuator and Remote Servo	2
VIII	EG-3C Actuator	2
IX	Hydraulic Amplifier	4
X	EG-M Control	1
XI	EG-M Inputs	3
XII	EG-M Outputs	3
XIII	Options and Accessories	3

WOODWARD ELECTRIC GOVERNOR MAINTENANCE SYSTEM EG-M (Cont'd)

XIV	EG-M System Adjustments and Troubleshooting	4
	TOTAL	32

Support Materials:

1. Instructor materials include a curriculum guide, lesson plans, and examinations totaling 218 pages.

2. Student materials include a trainee's guide totaling 175 pages and commercial bulletins.

3. One color film totaling 40 minutes.
   Two black and white films totaling 40 minutes.

4. Six charts
   26 transparencies

Equipment:

EG-3 Actuator
EG-R Actuator/Remote Servo
Servo controlled hydraulic amplifier
Governor tools
Woodward Governor/Actuator Test Stand and associated equipment
EG-M control box
EG-M spare parts
Integral Actuator Centering Device
Overhead projector
Slide projector
Projection Screen
Movie projector

Career Field: Marine Science (Navigation)

Course: PILOTING AND PUBLICATIONS (SHORT)

Catalogue No.: K-772-2102/SD **Course Date:** 5/11/72

Course Description:

This short course is designed to teach students the duties of a navigator or assistant navigator in piloting a vessel in harbor, coastal and other restricted waters utilizing proper charts, publications, navigational equipment and plotting techniques.

Comments:

This course covers skills which are fully compatible with procedures used on commercial vessels and private yachts.

Course Content:

Blocks		Hours
I	Introduction and Orientation	2.0
II	Navigational Publications	4.5
III	Current Sailing	1.0
IV	Magnetic Compass Error	2.0
V	Tides and Tidal Current	2.5
VI	Elements of Piloting	1.5
VII	Visibility of Lights	1.0
		14.5

Support Materials:

1. Instructor materials include a curriculum guide totaling 7 pages.
2. Student materials are all commercially available.

3. 1 black and white film totaling 35 minutes.

4. 30 Transparencies
   4 Audio/cassette programs totaling 180 minutes.

Equipment:

Blow-up of Time and Distance Table
Set and Drift Triangle
Chalkboard
Overhead projector
Motion picture projector
Motion picture screen
Tape recorder

Career Field: Marine Science (Navigation)

Course: RULES OF THE ROAD AND PRINCIPLES OF SHIPHANDLING (SHORT)

Catalogue No.: J-2G-604/N **Course Date:** 3/15/72

Course Description:

This short course is designed as a primer for students who have had limited shipboard experience.

Comments:

The material covered is totally compatible with procedures followed on commercial vessels and private yachts.

Course Content:

Blocks		Hours
I	Introduction	2
II	Rules of the Nautical Road	15
III	Principles of Shiphandling	20
IV	Review, Examination, and Critique	5
	TOTAL	42

Support Materials:

1. Instructor materials include curriculum guide and lesson plans totaling 143 pages.
2. Student materials include texts, class notebooks, examination booklets and answer sheets totaling 151 pages.
3. 3 black and white films totaling 18 minutes.
   2 color films totaling 60 minutes.
4. 678 Slides

Equipment:

16mm Motion picture projector
35mm Slide projector
Projector screen
Ship model (light trainer)

Career Field: Marine Science (Navigation)

Course: LORAN OPERATOR (SHORT)

Catalogue No.: J-2G/772-601/N   Course Date: 2/5/74

Course Description:

This short course is designed to enable students to operate typical Loran equipment, identify Loran signals, and plot a ship's position using Loran information.

Comments:

Totally compatible with the Loran C equipment used on commercial vessels and private yachts.

Course Content:

Blocks		Hours
I	Introduction	2 1/2
II	Station Arrangement, Accuracy, and Signal Wave Characteristics of Loran	2
III	Controls/Indicators and Operation of Loran Receiver/Indicators	2 1/2
IV	Introduction to Loran Charts and Publications	4
V	Review, Examination, and Critique	3
	TOTAL	14

Support Materials:

1. Instructor materials include a curriculum guide and lesson plans totaling 83 pages.

2. Student materials include written materials totaling 46 pages.

3. 2 black and white films totaling 44 minutes.

4. 13 Transparencies

Equipment:

Typical Loran "A"
Receivers (2 students per receiver)
Face Mockup of receiver used
Pair dividers
Triangles
Gum Erasers
Pencils
N.O. 221 Pubs
Loran Interpolator Multiplication Tables
16mm projector
Overhead projector
Projector screen

Career Field: Marine Science (Navigation)

Course: OMEGA OPERATOR (SHORT)

Catalogue No.: J-2G/061-606/N **Course Date:** 2/5/74

Course Description:

This short course is designed to train students in the concepts and operational procedures necessary to place the Omega receiver in the self check and automatic navigation mode, to determine position fixing by using receiver information, and to understand selected navigation charts as outlined for the Omega receiver.

Comments:

Totally compatible with operations and procedures utilized on commercial vessels and private yachts.

Course Content:

Blocks		Hours
I	Introduction	4
II	Omega Self Check Procedures	5
III	Introduction to Omega Charts and Publications	4
IV	Critique	1
	TOTAL	14

Support Materials:

1. Instructor materials include a curriculum guide totaling 42 pages.
2. Student materials include class notes, work sheets, and other written material totaling 46 pages.
3. 2 color films totaling 39 minutes.

4. 19 Transparencies
   23 Slides

Equipment:

16mm motion picture projector
35mm Slide projector
Overhead projector
Projector screen
Stop watch
Omega receiver
Antenna Coupler
Dividers
Triangles
Pencils
Gum Erasers

Career Field: Marine Science (Seamanship)

Course: SHIPBOARD LOOKOUT (SHORT)

Catalogue No.: J-000-621/N Course Date: 3/10/71

Course Description:

This short course is designed to train students to function as shipboard lookouts.

Comments:

Concentration on use and care of binoculars and sound power telephone equipment.

Course Content:

Blocks		Hours
I	Introduction	1
II	Lookout Duties and Responsibilities	6
III	Lookout Equipment and Procedures	2
IV	Review and Examination	2
	TOTAL	11

Support Materials:

1. Instructor materials include teaching guides and exams totaling 50 pages.
2. Student materials include two commercial texts, Government Printing Office documents, lesson plans, texts, and handouts totaling 78 pages.
3. 8 black and white films totaling 57 minutes.
   3 color films totaling 38 minutes.
4. 23 Transparencies

Equipment:

16mm Motion picture projector
Overhead projector
Projector screen
Binoculars
S/P phones
Ship's Light Trainer

Career Field: Marine Science (Seamanship)

Course: BOATSWAIN'S MATE (Basic)

Catalogue No.: J-060-6221/N **Course Date:** 11/15/72

Course Description:

This course is designed to train students in the basic skills and knowledge necessary for a boatswain's mate.

Comments:

This course includes over 60% material in a programmed form. The other 40% is almost totally "hands-on" activity. All material is compatible with operations on commercial vessels and private yachts.

Course Content:

Blocks		Hours
I	Introduction	2
II	Boatswain's Mate Duties	2
III	Marlinespike Seamanship	12
IV	Ground Tackle	4
V	Towing	1
VI	Painting and Equipment	4
VII	Review, Test and Critique	1
VIII	Aids to Navigation	3 1/2
IX	Weather	2
X	Rules of the Nautical Road	6
XI	Boat Seamanship	3
XII	Visual Signals	1

BOATSWAIN'S MATE (Basic) (Cont'd)

XIII	Life Saving Equipment	3 1/2
XIV	Review, Test, and Critique	3
XV	Boat Davits	4
XVI	Rigging	3
XVII	Cargo Handling	7
XVIII	Review, Final Examination and Critique	4
	TOTAL	66

Support Materials:

1. Instructor material includes a curriculum guide and lesson plans totaling 439 pages.
2. Student materials include programmed instruction and class notes totaling 523 pages.
3. 14 black and white films totaling 300 minutes.
   2 color films totaling 60 minutes.
4. 190 Transparencies

Equipment:

Movie Projector
Overhead projector
Projector screen
Life jacket (inflatable preserver, vest type)
Hydrostatic releasing gear
CO2 lifeboat-sample equipment
Coil - 21 thread 1 1/2"
Short lengths of different sizes of nylon line
Leadline
Boatswain chair
Different size blocks
Short lengths of different types of wire rope
Fids (different types)
Marline spikes
Wire rope clips
Seaman's knife

BOATSWAIN'S MATE (Basic) (Cont'd)

Serving mallet
Small amount of canvas
Sail needles
Grommet cutting set
Station marker box
Stage (rigged)
Flagstaff insignia (set)
Hooks (different sizes)
Detachable link
Mooring shackle
Standard chain stopper
Boat charts
Hand tools (all types)
Brushes, rollers, etc.
Masking tape
Spray gun
Dust respirator
Goggles
Probe
Small sections of fuel hose (male and female)
Ships cargo handling device (model - twin boom and hold)
Boat handling trainer kit (round davit model)
Model Welin davit - Mock up
Ground tackle model battleship mooring mock-up
Towing demonstrator device
Model typical boat boom and appendages mock-up
Accommodations ladder (small) and appendages

*Note: If small vessel is available for training, models and simulators will not be necessary.

Career Field: Marine Science (Seamanship)

Course: SEAMANSHIP (SHORT)

Catalogue No.: K-000-PC06/SD Course Date: 10/8/69

Course Description:

This short course is designed to introduce students to marlinespike and deck seamanship basics.

Course Content:

Blocks		Hours
I	Introduction	1
II	Marlinespike Seamanship	9
III	Deck Seamanship	11
IV	Examination and Review	3
	TOTAL	24

Support Materials:

1. Instructor materials include a curriculum guide totaling 15 pages.

Equipment:

Life jacket (inflatable preserver, vest type)
Hydrostatic releasing gear
CO2 lifeboat-sample equipment
Coil - 21 thread 1 1/2"
Short lengths of different sizes of nylon line
Leadline
Boatswain chair
Different size blocks
Short lengths of different types of wire rope
Fids (different types)
Marline spikes
Wire rope clips
Seaman's knife

SEAMANSHIP (Basic) (Cont'd)

Serving mallet
Small amount of canvas
Sail needles
Grommet cutting set
Station marker box
Stage (rigged)
Flagstaff insignia (set)
Hooks (different sizes)
Detachable link
Mooring shackle
Standard chain stopper
Boat charts
Hand tools (all types)
Brushes, rollers, etc.
Masking tape
Spray gun
Dust respirator
Goggles
Probe
Small sections of fuel hose (male and female)
Ships cargo handling device (model - twin boom and hold)
Boat handling trainer kit (round davit model)
Model Welin davit - mock up
Ground tackle model battleship mooring mock up
Towing demonstrator device
Model typical boat boom and appendages mock up
Accommodations ladder (small) and appendages

Career Field: Marine Science (Seamanship)

Course: WATER SURVIVAL AND RESCUE (SHORT)

Catalogue No.: K-000-2023/SD Course Date: 4/17/73

Course Description:

Designed to teach individuals who are capable swimmers the correct procedures for survival and rescue in varying sea conditions.

Comments:

Originally designed around the problems associated with downed aircraft at sea and the recovery of personnel from vessels in distress, this course is completely compatible with all rescue operations Naval or civilian.

Course Content:

Blocks		Hours
I	Introduction	1
II	Water Rescue - artificial respiration, proper swimming, lifesaving, and use of wet suit	19
III	Survival Training - clothing as a floating aid, tower jump and abandon ship procedures, swimming in burning oil, and drownproofing	5
IV	Initial screening and qualification swim	5
	TOTAL	30

Support Materials:

1. Instructor materials include a curriculum guide totaling 15 pages.
2. Student materials include handouts totaling 2 pages.
3. One black and white film totaling 25 minutes.

Three color films totaling 75 minutes.
One combination black and white and color film totaling 25 minutes.

4. 32 35mm slides
Audio tape used with slides totaling 25 minutes.
12 Transparencies

Equipment:

Swimming Pool
Wet suit, fins
Audio Tape Player
Slide Projector
Overhead Projector
16mm Motion Picture Projector
Projector Screen

Career Field: Medical Services

Course: MEDICAL CORPSMAN (Basic)

Catalogue No.: B-300-10,11/GL   Course Date: 11/12/74

Course Description:

The course consists of six core units, designed to provide the following training: (I) Introduction to basic anatomical and physiological concepts, structure and function of cells and tissues; introduction to major body systems, including integumentary, muscloskeletal, digestive, circulatory, respiratory, genitourinary, endocrine, and nervous. (II) Fundamentals of patient care including team care concepts, medical terminology, basic nursing procedures, medications, assisting with and monitoring intravenous therapy and blood transfusions, ward experience. (III) Cardio-pulmonary resuscitation, hemorrhage, shock, regional injuries, thoracic injuries, head/neck injuries, spinal injuries, abdominal injuries, extremity injuries, triage, transporting, heat/cold, burns, and emergency childbirth. (IV) Introduction to environmental health and safety, elementary microbiology, transmission of infection, immunizations, health records, veneral disease, fire/electrical and other hazards. (V) Review of basic arithmetical operations including fractions, decimals, percentage, apothecary and metric system, conversions, and dosage calculations. (VI) Principles of drug therapy including indications, contraindications, dosage, side effects, and adverse reactions of selected common drugs. Use of references.

Following the core curriculum, the student may specialize in a shore track or a sea track. The shore track trains students in the principles and techniques of medical-surgical nursing including fluid/electrolyte therapy, diseases and disorders of body systems, pediatric and geriatric nursing, and introduction to war management. The sea track includes three instruction units, which provide the following training: (I) intensive training in cardiopulmonary resuscitation, head/neck injuries, thoracic injuries, heat/cold/burns, use of morphine syrette, fluid replacement, NBC defense, equipment/ supplies, and casualty drills. (II) Advanced instruction in venereal disease control and education, habitability, general sanitation, food/mess/water sanitation and sewage disposal; vector/insect/rodent control and shipboard health hazards. (III) Didactic

MEDICAL CORPSMAN (Basic) (Cont'd)

Support Materials:

1. Instructor materials include instructor guides and examinations totaling 1,373 pages.

2. Student materials include programmed instruction and handouts totaling 1,440 pages.

3. 60 black and white films totaling 1,073 minutes.
   1 commercial black and white film totaling 20 minutes.
   111 color films totaling 2,535 minutes.
   2 commercial color films totaling 45 minutes.
   4 videotapes

4. 101 Charts
   354 Transparencies
   240 Commercial transparencies
   511 Slides
   144 Commercial sound/film strips
   4 videotapes

Training Aids:

19 models
3 life size dolls

Equipment:

Bed cradle
Foot board
Restraints (leather/cloth)
Sand bags
Ice bag
K-pad
Hot water bottle
Foam padding
Roll for hand
Chart rack with records
Basin
Towel
Lotion
Tooth brush
Asepto syringe
Mineral oil/glycerine
4x4

instruction in the recognition of major signs and symptoms of cardiac disorders, neurological disorders, diabetes and fluid/electrolyte disorders, meningitis, acute abdominal and respiratory emergencies, poisoning, and acute psychosis.

Comments:

This course is the prerequisite to an advanced medical service course.

Course Content:

Blocks			Hours
CORE	I	Anatomy and Physiology	45
	II	Basic principles and Techniques of Patient Care	96
	III	Basic First Aid	38
	IV	Basic Environmental Health and Safety	15
	V	Mathematics	15
	VI	Drug Therapy	27
	VII	Review and Critique	40
SHORE	VIII	Specialized Principles and Techniques of Patient Care	58
	IX	Review and Critique	10
SEA	X	Advanced First Aid	39
	XI	Advanced Environmental Health and Safety	15
	XII	Recognition of Medical Emergencies	10
	XIII	Review and Critique	6
		TOTAL	426

MEDICAL CORPSMAN (Basic) (Cont'd)

Bulb syringe
Dentures
Wash cloth
Opthalmoscope
Speculi (rectal, vaginal, nasal)
Endoscopes (esopho, broncho, procto, cysto, etc.)
24 hour urine collection (glass/disposable)
Pediatric urine collection bag
Urine bottle
Mid stream urine set
Blood culture bottles
Assorted blood collecting tubes and Vacutainer and barrel
Culturettes
Culture tubes
Levine tube with syringe and specimen jar
Sputum collection bottle/box
Complete thermometer tray
Electric thermometer
BP cuff
Mercury sphygmomanometer
Stethescope
Alcohol sponges
Cotton tip applicators
Sheep skin
Small pillow
Ace wrap
Shock blocks
Hydrocolator pack
Chemical ice collar
Ice collar
Bedboards
Covers for packs
Sheets
Pajamas
Soap
Emesis basin
Tooth paste
Mouth wash
Applicators/tongue blades
Denture cup
Commercial mouth swabs
Glass
Opthalmoscope
Flashlight
Safety pin
Skin pencil
Emesis basin
Stethescope

- BP cuff
- Gloves
- Finger cot
- Lubricant
- Tape measure
- Tongue blades
- Tuning fork
- Identi-band
- Admission form
- Disposable enemas (Fleets, oil retention, etc.)
- Lubricant
- Chux
- Funnel, Tubing, and graduate
- Disposable enema bag
- Bedpan
- Plastic urinal
- Gastric tubes
  - Levin
  - Salem sump
  - Ewald
  - Miller-Abbott
- Lubricant
- Emesis basin
- Ambu bag
- Oxygen mask
- Oxygen catheters
- Oxygen cannulas
- Trach mask
- Humidfier
- Extension tubes
- Connections
- Double ring basin holder
- I.V. standard
- Disposable and cloth gowns
- Paper and cloth masks
- Gloves
- Individual thermometer
- Drape
- Transfer forceps and jar
- Thumb forceps
- Gloves
- Suture/dressing set
- Catheters
  - Foley
  - Robinson
  - Mushroom
  - External

Straight razor
Safety razor
Prep tray
Phisohex
Airways, rubber/plastic
Tissues
Aspirating syringe
Adhesive tape
Water glass
Straws
Protective tower or pad
Stethescope
Round basin
CSR tape and wrappers
Assorted dressings
Assorted binders
Catheter plug
Disposable irrigation
Disposable drainage tube and bag
Urine strainers
Large beaker for measuring
Urometer
Endotracheal tubes
BP graph -- I & O Sheet
Hemovac
Medication cabinets
Medication boards and cards
Medication carts
Thoracic suction
Blow bottles
Hip sponges
Arms sponges
Pole
Bottles
IV Arms
Bronchoscope
Milking instrument
OTD-opthalmoscopes
Flashlights
Tongue blades
Continuous suction
Trach tubes
Stryker frame
Circoelectric bed
Neurological exam equipment (salt, pepper, hot, cold, etc.)
X-ray view box
Colostomy equipment

MEDICAL CORPSMAN (Basic)   (Cont'd)

Suction (gomco, Phellin)
Asepto syringes
50cc syringes
N/G tubes
Model G.I. systems
Proctoscope
T-tube
Insulin (U40, 80, 100)
Insulin syringes (u40, 80, 100)
Diet sheet
Diabetic flow sheet
Test tube
Clinitest tablets
Acetest tablets
Small beakers
Eye dropper
Test solution
Vaginal speculum
Pap smear slides
Spatula
Log
Fixative
Croupette
Crutches
Cytology chits
Culture tube
Lubricant
Gloves
Bandage materials
  Rollers-various sizes
  Triangulars
Bottle dressings - various sizes
Splints
  wire mesh
  basswoods
  wire ladder
Needles books
Suture material
Injection hyp demonstration sets
Suture demo boards
Long back boards
Short back boards
Hare splints
Thomas half ring
Molded splint (arm)
Universal splint
Neil-Robinson stretchers

MEDICAL CORPSMAN (Basic) (Cont'd)

Stoke stretchers
Army stretchers
Resusci "andy" manikins
Ambu resuscitator
Maulage kits
Chist'cut-away for CPR
Pneumatic splint sets
Sphygnomotonometer
B/P cups
Stethescope
Mr. "d" manikins

Career Field: Medical Services

Course: CLINICAL NUCLEAR MEDICINE TECHNICIAN (ADVANCED)

Catalogue No.: B-311-16/B Course Date: 2/15/75

Course Description:

Course trains students in basic knowledge and skills required to operate and maintain clinical nuclear medicine and radioactive therapy apparatus; to assist physicians in preparing and conducting clinical medicine procedures and to operate and maintain clinical nuclear medicine equipment, instrumentation; student is also trained in the organization and administration of a nuclear medicine clinic.

Comments:

Prerequisite for this course: Hospital Corpsman (Basic). Navy prefers that course entrants possess some basic mathematics and science background. Of the total course hours, 1,184 are devoted to clinical experience in a hospital.

Course Content:

Blocks	Hours
I Didactic Training Includes:	
Basic Mathematics	40
Applied Technical Mathematics	38
Basic Chemistry	39
Radiopharmaceuticals	48
Fundamentals of Atomic and Nuclear Physics	38
Radiation Instrumentation	65
Radiobiology and Radiation Dosiemtry	40
Radiological Safety	38

CLINICAL NUCLEAR MEDICINE TECHNICIAN (Cont'd)

Hematologic and Radionuclide Dilution Procedures	38
Gastronintestinal Absorption Measurements	15
Organ Concentration-Excretion Measurements	38
Imaging (Stationary and Rectilinear)	38
Competitive Binding Radioassay	26
Therapy Procedures	15
II Clinical Experience	
Administrative Procedures	74
Radionuclide Utilization and Radiopharmaceutical Preparation	74
Rectilinear Scanning	259
Photoscanning (Stationary Imaging)	248
Hematological and Radionuclide Dilution Procedures	148
Gatrointestinal Absorption Measurements	74
Organ Concentration-Excretion Measurements	148
Competitive Binding Radioassay	111
Therapy Procedures	16
Radiation Safety	32
TOTAL	1700

Support Materials:

1. Instructor materials include guidelines and lesson plans amounting to 1,200 pages.

2. Student materials including study guides, handouts, etc., amounting to approximately 972 pages.

3. 20 black and white films totaling 580 pages
   12 color films totaling 510 minutes
   3 color commercial films totaling 110 minutes

4. 117 black and white transparencies
   100 black and white lantern slides
   508 color slides
   217 commercial color slides
   27 charts
   5 commercial color charts

Equipment:

Slide rules
Giant teaching slide rule
Flannel board and stand
Bench model dose calibrator
Didactors (programmed instruction machines)
Electric typewriters
Manual typewriters
Scintillation counting equipment
X-Y scintillation plotters
35mm slide projector
16mm movie projector (sound)
Lantern slide projector
Centrifuge
Overhead projector
Motorized and folding projection screens
Drying oven
Laboratory glassware
American binocular microscope
Picker 3" and 5" rectilinear scanners
Organ phantoms (thyroid, liver, brain, etc.)
Film cassettes
3-M copy system
Wilson cloud chamber
Quartz fiber electroscope
Radiation protective clothing

CLINICAL NUCLEAR MEDICINE TECHNICIAN (Cont'd)

Radiation shielding material
Radiation survey meters
Auto-gamma counting system
X-ray view box
Various syringes and needles
Various counting tubes
Planchettes
Lead absorbers
Radioactive receipt and disposal records
Graphing paper (linear, logarithmic and semilogarithmic)
Radioactive decontamination solutions and equipment
Film badges for radiation exposure
Pocket dosiemeters for radiation exposure
Paper chromotography testing equipment

Career Field: Medical Services

Course: CYTOLOGY TECHNICIAN (ADVANCED)

Catalogue No.: B-311-32/N Course Date: 2/15/75

Course Description:

Course trains students in processing of cytology smears (identification, staining, cover slipping, and labeling); processing of fluids from various cavities of the body (cell blocks); screening of routine cervical smears with proficiency in identifying celluar changes that occur in various situations (inflammation, protozoa fungi, viral radiation and malignancy).

Comments:

Prerequisites for this course: Hospital Corpsman (Basic). Course is taught on a one-to-one instructor/student ratio. Of the total hours, 381 are devoted to practical application.

Course Content:

Blocks		Hours
I	Cytology Specimen Preparation	84
II	Gynecological Cytology	336
	TOTAL	420

Support Materials:

1. Instructor materials cannot be determined at this time.
2. Student materials include study guides, handouts, etc., amounting to 60 pages.
3. 200 color transparencies
   100 commercial color transparencies
   400 microscopic slides

Equipment:

Overhead projector
Microscope
Fixative
Staining dishes
Various percentages of alcohol and xylene
Stains: Hematoxylin, Og6, EA50
Coverslips
Labels for slides

Career Field: Medical Services

Course: CARDIOPULMONARY TECHNICIAN (ADVANCED)

Catalogue No.: B-300-18/B Course Date: 2/15/75

Course Description:

This course trains students in the following: detailed anatomy and physiology of the heart, lungs, and vascular system; fundamentals of physics as applicable to cardiopulmonary techniques; basic mathematics and slide rule; electrocardiogram interpretation; purpose, methods, and tabulation of results of cardiac catheterization; sterile field technique and care of surgical instruments and catheters; fluoroscopy, cineradiography and protective measures; gas and blood gas analysis; purpose, method, and reporting of pulmonary function procedures; purpose, methods and tabulations of results of other tests; operation, maintenance, and minor repair of machines used.

Comments:

Prerequisite for this course is Hospital Corpsman (Basic). In addition, the Navy prefers students to have had some ward experience and a good mathematics background. Students should be highly motivated and willing to work long hours upon assignment to a hospital. Of the total hours of this course, 1,485 hours are devoted to practical application.

Course Content:

Blocks		Hours
I	Anatomy and Physiology	60
II	Physics	60
III	Mathematics	60
IV	Electrocardiographic Monitoring	230
V	Cardiac Catheterization Procedures	200
VI	Surgical Technique	55

VII	X-Ray Technique	130
VIII	Gas Analysis	240
IX	Pulmonary Functions	260
X	Other Clinical and Laboratory Procedures	465
XI	Operation and Maintenance of Machines	279
	TOTAL	2039

Support Materials:

1. Instructor materials include lesson plans totaling approximately 1000 pages.

2. Student materials include study guides, handouts, and related material totaling approximately 400 pages.

3. Six color films totaling 111 minutes
   Two black and white films totaling 51 minutes
   Three commercial color films totaling 75 minutes
   Five color video tapes totaling 197 minutes
   One black and white video tape totaling 30 minutes

4. 75 slides (color)
   75 slides (black and white)
   191 color commercial slides
   300 color commercial transparencies

Equipment:

16mm motion picture projector
Slide projector
Overhead projector
Video player and monitor
7 liter spirometer with He and CO analyzers
Pocket calculator
Assorted needles and glass syringes
4 x 4 sterile gauze
Adhesive tape
Ergometer
Screening devices - mini testers

IPPB machine for bronchodilation
Metric rulers
Blood gas analyzer and accessories
Scholander
Tonometer
Tissot tank
Wedge spirometer
4 gas cylinders
Weather balloon
Barometer
Gas chromatograph
Ergometer with bicycle
Tap table with arm support
Mannequin
Resussi Anne
Heart model
Lung model
Bird - Mark VII
Bennett - AP5, PR2, MA1
Ohio 560
Bournes - pediatric respirator
O_2analyzer
Aerosol devices
Pressure cycled machines
Volume cycled machines
Assortment tubing for each machine
Slide rules
Biplane CineaPulse system (by Fisher)
RP-XOMat
Fisher Processall
EKG machine
Physio control minotor with oscilloscope
Poly rhythm
Assortment of heart catheters and guide wires
Gas autoclave
Steam autoclave
Assorted instruments (clamps, sutures, needles)
Pacemakers (demand and fixed rate)
Viamonte Hobbs and Cordis injectors
Green dye equipment
AO Oximeter
Pressure manifolds with tubing
8 channel physiological monitor
Holter monitor equipment
Echocardiograph machine and accessories
Vectorcardiograph machine and accessories
Phonocardiograph machine and accessories

Career Field: Medical Services

Course: HISTOLOGY TECHNICIAN (ADVANCED)

Catalogue No.: B-311-42/N Course Date: 1/15/75

Course Description:

Course includes training in: origin of tissues in relation to human body; differential features in normal histology; definition of terms used; methods of reducing material for microscopic study; paraffin methods of embedding tissues; care and use of microtomes, knives and other equipment; routine stains; technique of freezing sections; autopsy technique; care of cadavers and record keeping.

Comments:

Prerequisite for this course: Hospital Corpsman (Basic). In addition, the Navy prefers the trainee to have had some science background and at least a year's experience in a hospital where surgery is performed. This course is taught on a one-to-one ratio. Of the total hours, 120 are practical application. The equipment is that used routinely in a large hospital.

Course Content:

Blocks		Hours
I	Tissue pathology; preparation for histopathological examination	160
	TOTAL	160

Support Materials:

1. Instructor materials include a curriculum outline, lesson plan, examinations and check sheets. Total pages were not available at the time this inventory was compiled.

2. Student materials include information handouts and study guides amounting to 25 pages of original course materials.

3. No audio or visual aids are utilized.

Equipment:

Water bath
Microtome
Forceps
Tissue embedding machine
Autotechnicon, tissue processor

Career Field: Medical Services

Course: MEDICAL LABORATORY TECHNICIAN (ADVANCED)

Catalogue No.: B-311-11/N   Course Date: 12/15/70

Course Description:

This course includes training in: clinical laboratory apparatus and techniques; handling of samples; routine and microscopic urinalysis; basic hematological determinations; bacteriology including cultivation and preparation of specimens for identification; diseases detectable by routine serology; identification of parasites; analystical techniques and chemical calculations.

Comments:

Prerequisite for this course is the Navy Hospital Corpsman (Basic) course.

Course Content:

Blocks		Hours
I	Introduction to the clinical laboratory	38
II	Blood and tissue specimen	80
III	Urinalysis	120
IV	Hematology	130
V	Bacteriology	30
VI	Serology	40
VII	Parasitology	40
VIII	Chemistry	80
	TOTAL	568

Support Materials:

1. Instructor materials include a curriculum outline, lesson plan, examinations and checksheets totaling approximately 290 pages.

2. Student materials include information handouts and study guides totaling approximately 250 pages.

3. Ten color films totaling 109 minutes.
   Ten commercial color films totaling 100 minutes.

4. 25 slides
   25 commercial slides
   15 black and white transparencies
   2 color transparencies
   4 charts

Equipment:

16mm projector
Slide projector
Overhead projector
Projector screen
Microscope
Lamp
Micrometer
Lens paper
Xylene
Immersion oil
Intraval timer
Needle holder
China marking pencil
Disposable needles
Disposable Tubes
Plain glass slides
Cover glasses
Capillary tubes
Tourniquet
Lancet
Alcohol sponges
Dry sponges
Band-Aids
Torsion bar balance
Trip balance
Weights

MEDICAL LABORATORY TECHNICIAN (Cont'd)

Measuring pipets
Volumetric pipets
Cylinders
Graduates
Flasks
Beakers
Stock bottles
Carboys
Spatula
Powder papers
Centrifuge
Urinometer and urinometer tube
Centrifuge tube
Albumin comparison standards
Refractometer
Specimen bottles
Gallon specimen bottles
Test tubes and rack
Hema-Combistix
Clinitest tabs
Sulfo-salicyclic acid
Acetest tablets
Hematest tablets
Bilirubin test kit
Phenistix
Urobilistix
Preservatives
Drying oven
Pipet washer
Vacuum pump (spigot type)
Coulter counter
Auto-dilutor
Phase microscope
Cyan-methemoglobinometer
Vibrator
Aliquate mixer
IAP
Dilution cups
Drabkins fluid
Fibrinometer
Ultra-violet light
Blood counter, Marbel
Blood counter
Haden-Hauser hemoglobinometer
Sahli-Hellige hemoglobinometer
Microhematocrit centrifuge

MEDICAL LABORATORY TECHNICIAN (Cont'd)

Hemacytometer
Blood cell diluting pipet
Sahli pipet
Sedimentation rate tubes
Microhematocrit interpreter
Spit tube
Straining rack
Wright's stain
Wright's buffer salts
10/N hydrochloric acid
Gower's solution
14% magnesium sulfate
Pilot's solution
Aqueous sodium metabisulfate
Plain capillary tubes
Ring stands and funnels
Filter paper
Water bath
View box
Incubator
Rotating machine
Refrigerator
Biconcave slides
Ringed slide
Kits:
  Mono-spot test
  R-A Latex test
  VDRL antigen kit
  RPR card test
  ASO test antigen
  C-reactive protein
  Gravindex test
Unna's stain
Anti-A and B grouping serums
Anti-D typing serum
Vasoline
Candle jar
Brewer jar
Bunsen burner
Bacteriology loop
Bacteriology needle
Durham tubes
Petri dishes
Antibiotic sensitivity disks
Media
Stains

MEDICAL LABORATORY TECHNICIAN (Cont'd)

Flat-bottomed test tubes
Screw-topped test tubes
Brine
MIF staining technic
Co-man Jr. spectrometer
Flame photometer
Colorimeter (Dubosq)
Cuvets
Didanium filter

Career Field: Medical Service

Course: MEDICAL SERVICE TECHNICIAN (ADVANCED)

Catalogue No.: B-300-15/N Course Date: 11/15/72

Course Description:

This course includes training in applied anatomy and physiology, preventive medicine, pharmacology and toxology.

Comments:

Prerequisite for this course is the Navy Hospital Corpsman (Basic) course. The Navy utilizes lecture, demonstration, and practical "hands-on" techniques to teach this course. Blocks V, XI, XII, XIII, XIV, XV, and part of XVII have been deleted, since they apply only to the U.S. Navy.

Course Content:

Blocks		Hours
I	Anatomy and physiology	70
II	Diagnostics and treatment procedures; management of medical and surgical conditions	190
III	Physician's aid	10
IV	Clinical observation	60
VI	Pharmacy management and pharmaceutical mathematics	40
VII	Pharmacology and toxology	90
VIII	Drug abuse familiarization	10
IX	Preventive medicine and industrial health and safety	100
X	Clinical laboratory techniques and procedures	50

MEDICAL SERVICE TECHNICIAN (Cont'd)

XVI	Communication skills	120
XVII	Management-psychology and principles of management	120
XVIII	Introduction to automatic data processing	60
	TOTAL	920*

Research Notes: *Extracted from a 1,440-hour Navy course. Civilian-related material: 58%.

Support Materials:

1. Instructor materials include a curriculum outline, lesson plan, examinations and checksheets on which total pages were not available at the time this inventory was compiled.

2. Student materials include information handouts and study guides totaling approximately 1,126 pages.

3. Three black and white films totaling 115 minutes.
   Nineteen color films totaling 461 minutes.
   Twenty-two commercial black and white films totaling 358 minutes.
   Thirty-six commercial color films totaling 848 minutes.
   Fourteen color videotapes totaling 563 minutes.
   One audio recording totaling 60 minutes.

4. 1,500 commercial color slides
   107 commercial color transparencies
   5 charts
   10 commercial charts

Equipment:

16mm motion picture projector
Overhead projector
35mm slide projector
Projector screen
CPR Resusi Andy
Intubation manikin
I.V. set-ups

MEDICAL SERVICE TECHNICIAN (Cont'd)

Oxygen equipment
Self-inflating bag resuscitator
Various surgical instruments
Venipuncture training arm
Suction apparatus
Opthalmascopes
Gavage and lavage tubes
Airways
Assorted splints
Laryngoscope
Closed circuit T.V.
Cassette tape deck
Reel-to-reel tape player
Suturing material
Moulage sets
Assorted bandages
Catheters
Stethescopes
Blood pressure cuffs
Otoscopes
Assorted Stretchers
Assorted syringes
Skeleton

Career Field: Medical Services

Course: NEUROPSYCHIATRIC TECHNICIAN (ADVANCED)

Catalogue No.: B-302-45/B Course Date: 1/15/75

Course Description:

This course trains students to assist professional personnel in the care and treatment of psychiatric patients. It includes such areas as normal and abnormal aspects of mental health, theories and principles of psychiatric nursing, planning and administering total patient care, observation procedures and therapies, manifestations and nursing care of central nervous system diseases, and review of emergency treatments of injuries.

Comments:

Prerequisite for this course is the Navy Hospital Corpsman (Basic) course. A variety of methods is used to teach this course: lecture demonstrations, discussions, and role play. It should be noted that 440 hours of this course is practical application (all in Block IV).

Course Content:

Blocks		Hours
I	Orientation	30
II	Clinical aspects of mental illness	30
III	Psychiatric nursing concepts	60
IV	Psychiatric nursing care	500
V	Neurology	10
VI	First aid	10
	TOTAL	640

Support Materials:

1. Instructor materials include the curriculum guide, entitled Neuropsychiatric Technician, and other materials, totaling 205 pages.

2. Student materials include study guides and handouts totaling approximately 105 pages. In addition, five commercial textbooks are used for reference purposes.

3. Five black and white films totaling 226 minutes.
   Three color films totaling 106 minutes.
   Two commercial black and white films totaling 52 minutes.
   Two commercial color films totaling 43 minutes.

4. Fifteen black and white transparencies.
   Six commercial audio cassettes totaling 92 minutes.

Equipment:

16mm motion picture projector
Motion picture screen
Transparency projector
Cassette tape recorder
Resusciamne
Leather restraint set (for legs and arms)
One bed with plastic covered mattress
Two woolen blankets
Six sheets
Large pan containing ice water

Career Field: Medical Services

Course: OCULAR TECHNICIAN (ADVANCED)

Catalogue No.: B-300-0020/B Course Date: 1/15/74

Course Description:

Course trains students to assist the opthamologist and optometrist in the treatment and care of patients with ocular disorders including managerial and clerical duties; clinical tests and procedures; preparation and usage of various instruments and equipment needed for diagnosis and treatment of patients; and fitting and dispensing of eyeglasses.

Comments:

Prerequisite for this course: Hospital Corpsman (Basic). In addition, the Navy prefers student to have had at least six months ward experience. Because of the equipment requirements and the technical nature of this course, it could best be taught at a medical center associated with an opthamology or optometry clinic. Two-thirds of this course is devoted to practical application in a clinic.

Course Content:

Blocks		Hours
I	Anatomy and Physiology	30
II	Mathematics	20
III	Pharmacology	40
IV	Clinical Management	100
V	Clinical Procedures	180
VI	Opthalmic Optics	110
	TOTAL	480

OCULAR TECHNICIAN (Cont'd)

Support Materials:

1. Instructor materials include lesson plans amounting to approximately 600 pages.

2. Student materials include study guides, handouts *etc., amounting to approximately 2,400 pages.*

3. Eight commercial color films totaling 200 minutes
   Two color video-tapes totaling 70 minutes
   Five commercial color video-tapes totaling 100 minutes

4. 112 color commercial slides
   25 black and white commercial slides
   3 commercial anatomical models
   1 commercial anatomical chart

Equipment:

Movie projector 16mm
Slide projector
Movie screen
Ophthalmoscope
Schoitz tonometer
Applanation tonometer
Near vision test chart
Distant vision test chart
Prince rule
AO color test book
HRR color test book
Farnsworth-Munsell 100 hue test
Worth-4-dot
Exophthalmometer
Tonographer
Strabismomter
Autoplot
Arc perimeter
Hemispherical perimeter
Armed Forces vision tester
Felt tangent screen
Retinoscope
Slit lamp
Prisms bars
Rotary prism
Verhoeff stereoptor

OCULAR TECHNICIAN (Cont'd)

Titmus test
Various occluders
Schematic eye
Keratomer
Fundus camera
Phoropter
Keratoscope
Optokinetic drum
Lensometer
Various tools for dispensing
Maddox rods

Career Field: Medical Services

Course: OPERATING ROOM TECHNICIAN (ADVANCED)

Catalogue No.: B-301-30/B Course Date: 1/15/75

Course Description:

This course provides trainees with the knowledge and skills needed to prepare and maintain an operating room for surgery. It includes selection, sterilization and laying out of instruments and supplies necessary for surgical procedures; transportation of patient to operating room, utilizing safety and comfort measures; preparation of patient for surgery and administration of nursing care to patient during and after surgery; performance in surgical environments in assisting both the surgeon and the anesthesiologist.

Comments:

Prerequisite is the Hospital Corpsman (Basic) course. It should be noted that of the total hours in this course, only 160 hours are in the didactic mode. The preponderance of learning takes place in practical application. In addition, Block VI also involves lectures by surgeons in areas of general, plastic, gynecology, urology, obstetrical, otolaryngology, ophthalmolgy, orthopedics, neurology, thoracic, and cardiovascular surgery.

Course Content:

Blocks		Hours
I	Introduction and Orientation	8
II	Care and Safety of the Patient During Surgery	142
III	Principles of Operating Room Techniques	185
IV	Surgical Procedures Organization	88
V	Management of Surgical Supplies, Instruments and Equipment	100

VI	Operative Procedures of Surgical Specialties	505
VII	Graduate Technician Responsibilities	12
	TOTAL	1040

Support Materials:

1. Instructor materials total 100 pages.
2. Student materials include study guides and excerpts from military manuals amounting to approximately 100 pages. In addition, 32 commercial publications are available as reference materials.
3. One black and white film totaling 28 minutes
   16 color commercial films totaling 367 minutes
4. Seven commercial charts
   423 slides

Facilities:

Operating room

Equipment:

Motion picture projector
Slide projector
Chase doll
Instrument packs
Surgical linen, wrappers
Rubber gloves
Solutions
Washer autoclave
High speed autoclave
Downward displacement autoclave
Gas autoclave (ethylene oxide)
Aeration chamber for gas autoclave
Solution warming cabinets
Wheeled stretcher
Solution basin
Instrument tables

Basin stands
Foot stool
Assorted general surgical instruments
linen packs
Model pack room
Rubber tubing
Suction bottles
Wet vacuum
Disinfectant solutions
I.V. standards
Revolving stool
Supply stand
Disposable caps
Disposable masks
Disposable beard hoods

Career Field: Medical Services

Course: OPTICIAN TECHNICIAN (ADVANCED)

Catalogue No.: B-3111-25/N Course Date: 2/15/75

Course Description:

Course trains students in: optical qualities of ophthalmic glass, hard resin and impact resistant materials; ocular anatomy; physiology of the visual system; fundamentals of the physical properties of light; geometrical analysis of the paths of light in refraction and reflection; mathematics; theoretical optics; theory and practical application of ophthalmic optics as applied to spectacle fabrication; practical application of ophthalmic optics as applied to dispensing; preventive maintenance and trouble shooting and practical application of opthalmic optics as applied to spectacle lens manufacture.

Comments:

Prerequisite for this course: Hospital Corpsman (Basic). Of the total hours for this course, 647 are devoted to practical application, hence the need for the equipment noted.

Course Content:

Blocks		Hours
I	Introduction to Optics	30
II	Anatomy of the Eye	35
III	Physiology of the Eye	35
IV	Physics of Light	16
V	Geometrical Optics	16
VI	Mathematics	22
VII	Technical Mathematics	27
VIII	Lens Design	20

OPTICIAN TECHNICIAN (Cont'd)

IX	Spectacle Fabrication	330
X	Ophthalmic Dispensing	75
XI	Equipment Repair and Maintenance	23
XII	Mechanical Optics	369
	TOTAL	992

Support Materials:

1. Instructor materials include curriculum guides and lesson plans amounting to 546 pages.

2. Student materials include guides and handouts amounting to 1370 pages.

3. Four black and white films totaling 75 minutes
   Seven color films totaling 240 minutes
   Two color video tapes totaling 90 minutes

4. 170 black and white transparencies
   236 color slides
   30 black and white slides
   38 commercial color slides
   One physics chart with 60 pages
   Two anatomical charts, color
   Three audio cassettes totaling 90 minutes

Equipment:

3m 209 dry copy machine
TV video tape machine
Overhead projector
Lens measuring device
Optical protractors
Hand-neutralization sets
Geneva lens measurers (lens clocks)
MM rulers (PD rulers)
Half-round pliers
44G fiberback pliers
Assorted optical files
Bridge expanding pliers
Opticians wire cutters

OPTICIAN TECHNICIAN (Cont'd)

Boley gauge
Thickness calipers
Assorted spectacle wire frames
China markers/lead
Diamond hand stones (AIT & LeMay)
A.O. thickness gauges
Movie projector and screen
Slide projector
Cassette player recorder
Typewriters
Lens marking device
Frame warmers
Optical work tables & chairs
Opticians screwdrivers
Axis aligning pliers
40G temple aligning pliers
Chipping pliers
Opticians anvils
Adjustable stroke punches
Bridge reducing pliers
Damascus punches
P-11 double rubber jaw pliers
Prescription aligners
Box-O-Graphs
Assorted spectacle plastic frames
Lens marking ink
Lens edging equipment
A.O. generators (Gen-All)
Hot plate
A.O. metal alloy blockers
A.O. twin spindle surfacers
A.O. forced air drying devices
Assorted open end/box wrenches
Pliers
Large assortment allen wrenches
Visual effects projection set
Oil, #30
Pellon pads (2nd fine)
Low melting point metal alloy
Acetone
Fining compound A80
Polishing compound (solution)
Hairspray - superhold
Shuron/Cont. Generators (390-B)
Deep fat fryer
Assorted lens dyes
Ultrasonic cleaner

OPTICIAN TECHNICIAN (Cont'd)

3/4" socket set
Hammer
Assorted sizes regular/phillips screwdrivers
Light sources
Grease gun with grease
Wire mesh pads (1st fine)
Felt pads (polish)
WD-40
Fining compound A60
PSI #1 Cool-It
Winter/summer Prestone II

Career Field: Medical Services

Course: OTORHINOLARYNGOLOGY TECHNICIAN (ADVANCED)

Catalogue No.: B-300-0024/B   Course Date: 2/15/75

Course Description:

Course provides students with a working knowledge of the general principles and techniques of nursing as related to the care and treatment of ENT patients, to conduct routine diagnostic tests, to administer prescribed medications, to apply emergency first aid and procedures and to assist the doctor in minor and major surgical procedures.

Comments:

Prerequisites for this course: Hospital Corpsman (Basic) and 160 selected hours of the Operating Room Technician course. In addition, the Navy prefers that students have had some ward experience, have good hearing and that they are coordinated. Of the total hours in this course, 270 are devoted to practical application in the various clinics.

Course Content:

Blocks		Hours
I	Selected Portion of Operating Room Technicians Course	
II	Otorhinolaryngology (ENT) Techniques	240
III	Practical Application	
	ENT Clinic	70
	ENT Operating Room	125
	Audiology	45
	TOTAL	480

Support Materials:

1. Instructor materials includes lesson plans amounting to approximately 1,000 pages.

2. Student materials includes study guides, handouts, etc., amounting to approximately 200 pages. In addition, students are issued 13 commercial texts which they use throughout the course.

3. Two black and white films totaling 43 minutes
   Eight color films totaling 292 minutes
   Two color films totaling 75 minutes
   11 color commercial video-tapes totaling 385 minutes

4. 115 color slides
   40 commercial color slides
   One color chart
   One commercial phonograph record totaling 40 minutes

5. Commercial models: skull, ear (outer, middle, inner), temporal bone, larynx, Para-nasal sinuses, Human nose lateral section

Equipment:

Movie projector and screen
Slide projector
Tuning fork
Audiometer
Otoscope with speculums
Videotape playback unit and monitor
Operating microscope
Impedence equipment
ENG equipment
Screening booth
Clinical instruments and related gear
Surgical instruments and related gear
Trach tubes
Sinus irrigation trays
Caldwell-Luc tray
Middle ear tray
Mastoid tray
Minor fascia tray
Rhinoplasty tray
Record player

OTORHINOLARYNGOLOGY TECHNICIAN (Cont'd)

Septoplasty tray
Bone tray
Tonsillectomy tray (adult and children)
Clarence tray
Radical neck tray
Ritter unit with chair
Nasal fracture tray
Nasal bleeder tray
Tonsil bleeder tray
Tracheostomy tray
Hall air drill
Stryker drill
X-ray view box
Myringotomy tray
P.E. tubes
Surgical prepping and dressing supplies
ENT drugs (drops, tablets, injection)
Gas clave
ENT forms
Nasal Polypectomy
Stapes prosthesis
Otoplasty
Bronchoscopy
Esophagoscopy
Nasopharyngoscopy
Hurst dilators
Arch bar set
Brown dermatome
Jordan day drill
Kerr drill set
Hilgen facial nerve stimulator
Mandibular fixation tray

Career Field: Medical Services

Course: PHARMACY TECHNICIAN (ADVANCED)

Catalogue No.: B-312-25/N   Course Date: 6/15/74

Course Description:

Course includes training in calculations peculiar to pharmacy; fundamentals of inorganic chemistry and organic compounds; medicinal synthetics, nomenclature and incompatibilities; history and ethics of pharmacy; pharmaceutical equipment, use and care; compounding and dispensing medicinal preparations; introduction to typing; description, properties, uses, toxicology and doses of drugs; and preparation and therapy of I.V. admixtures.

Comments:

Prerequisite for this course: Hospital Corpsman, (Basic). The Navy prefers that students have some high school chemistry. Approximately half way through the course, the student is furnished on-the-job training by working in a hospital pharmacy a half day per week, filling prescriptions, bulk compounding, etc., under the direct guidance of an experienced pharmacist. Phases X and XI have been deleted from this course since they apply only to the U.S. Navy.

Course Content:

Blocks		Hours
I	Pharmaceutical calculations	120
II	Inorganic chemistry	96
III	Organic chemistry	96
IV	Pharmaceutical chemistry	96
V	Principles of pharmacy	128
VI	Compounding and dispensing pharmacy	204
VII	Pharmacy orientation	48

PHARMACY TECHNICIAN (Cont'd)

VIII	Typing	20
IX	Basic pharmacology and toxicology	324
XII	Intravenous admixtures	30
	TOTAL	1162

Support Materials:

1. Instructor materials include a curriculum outline, lesson plan, examinations and checksheets amounting to approximately 1,040 pages.

2. Student materials include information handouts and study guides amounting to approximately 1,070 pages.

Equipment:

Pharmaceutical balance
Weights, metric set
Water bath
Asbestos board, 12 x 12"
Surgical razor blade
Pill tile, glass 10"
Glass beads (for water bath)
Casserole laboratory 340 ml
Rubber tubing shutoff clamp
Screw adjusting clamp
Evaporating dish 525 ml
Evaporating dish 250 ml
Evaporating dish 150 ml
Forceps, pinning, entomological
Paper, pHydrion pH 2-10
Paper, pHydrion pH 1-11
Pipette, dropper, glass (medicine dropper)
Serological pipette 10 ml
General purpose pipette 1 ml
Glass Assor stirring rod
General purpose 9" shears (scissors)
Metal spatula, 6"
Metal spatula 3"
Rubber spatula, 8"
Rubber spatula, 4"
Thermometer, Chem-10° to +200° C

PHARMACY TECHNICIAN (Cont'd)

Laboratory tongs
Pencil wax, marking, blue
Laboratory beaker 1000 ml
Laboratory beaker 600 ml
Laboratory beaker 400 ml
Laboratory beaker 250 ml
Laboratory beaker 100 ml
Laboratory beaker 50 ml
Laboratory gas burner
Tube, rubber for above burner
Erlenmyer flask 1000 ml
Erlenmyer flask 500 ml
Erlenmyer flask 250 ml
Erlenmyer flask 125 ml
Erlenmyer flask 50 ml
Filtering flask 500 ml
Ribbed glass funnel, 16 oz.
Non-ribbed glass funnel, 65 mm
Graduate, conical, liq 1000 ml
Graduate, conical, liq 500 ml
Graduate, conical, liq 250 ml
Graduate, conical liq 100 ml
Graduate, conical, liq 50 ml
Graduate, conical, liq 25 ml
Graduate, cylindrical 100 ml
Graduate, cylindrical 25 ml
Graduate, cylindrical 10 ml
Graduate, cylindrical 5 ml
Asbestos wire guard grid, 6 x 6"
Glass mortar and pestle, 8 oz.
Wedgewood mortar and pestle 1185 ml
Wedgewood mortar and pestle 150 ml
Support stand
Rings 3"
Rings 4"
Rings 5" Tripod

Career Field: Medical Services

Course: PHYSICAL AND OCCUPATIONAL THERAPY TECHNICIAN (ADVANCED)

Catalogue No.: B-303-50/B　　Course Date: 2/15/75

Course Description:

Course furnishes students with basic knowledge and skills necessary to assist occupational therapists, physical therapists and doctors in the treatment of patients. It includes: background of related sciences; basic application of scientific principles of hand printing, leatherwork, weaving and woodwork; fabrication and fitting of static and dynamic splints and assistive devices; occupational therapy psychiatric treatment techniques; administration of such therapeutic procedures as massage, hot and cold packs, whirlpool bath, paraffin bath, infrared, ultraviolet, diathermy and electrical stimulations; therapeutic exercise programs (including range of motion, joint measurement, gait training, postural exercises and other exercise routines for strength, endurance, and mobility. In addition student becomes familiar with various types of equipment and devices commonly used in occupational and physical therapy.

Comments:

Prerequisite for this course: Hospital Corpsman (Basic). Navy prefers some ward experience. Upon completion of course, Navy assigns students to a hospital where there is an occupational and physical therapist, for a four-month additional clinical training period (two months in physical therapy and two in occupational therapy). The two-month period in occupational therapy is equally divided between neuropsychiatric and physical disabilities.

Course Content:

Blocks		Hours
I	Orientation and Administration	10
II	Functional Human Anatomy	104

PHYSICAL AND OCCUPATIONAL THERAPY TECHNICIAN (Cont'd)

III	Applied Human Physiology	50
IV	Basic Physics	10
V	Elementary Psychology and Psychiatry	60
VI	Theory and Technique of Therapeutic Exercise	125
VII	Rehabilitation Methods	64
VIII	Medical Science	16
IX	Laboratory and Clinical Observation and Practice	65
X	Techniques of Occupational Therapy	185
XI	Physical Therapy Procedures	135
	TOTAL	824*

*Note: Extracted from a 1,120-hour Navy course. Civilian related materials: 74 percent.

Support Materials:

1. Instructor materials include lesson plans amounting to approximately 1,000 pages.

2. Student materials including study guides, handouts, etc., amounting to approximately 1,580 pages.

3. 13 black and white films totaling 195 minutes
75 color films totaling 1,125 minutes
8 commercial black and white films totaling 120 minutes
24 commercial color films totaling 480 minutes
24 commercial film loops totaling 240 minutes
40 8mm commercial color super cassettes totaling 120 minutes
51 color videotapes totaling 765 minutes

4. 187 color transparencies
120 color slides
8 commercial color charts

PHYSICAL AND OCCUPATIONAL THERAPY TECHNICIAN (Cont'd)

Equipment:

Physical Therapy
Microwave machines
Ultraviolet lamps
Shortwave diathermy machines
Electrified stimulation machines
Infrared lamps
Ultrasound machines
Paraffin bath
Traction machines
Hydrocalator machines (hot and cold)
Chilling unit
NK table
Crutches
Canes
Prosthetic devices
Finger ladders
Goniometers
Intermittent hand dynamometer
Compression machine and appliances
Plinths
Weights (dumbells and plates)
Weight caddy
Sand bags
Resistive boots and bars
Wheelchairs
Exercise mats
Whirlpools
Parallel bars

Occupational Therapy
Potter's wheels
Ceramic molds
Ceramic kilns
Ceramic supplies (clay, paints, etc.)
Leather craft stamping tools
Leather mallets
Leather supplies (stains, dyes, etc.)
Band saw
Circular table saw
Drill press, table and portable electric
Tool cabinet with complete set of woodworking tools
Combination disk/belt sander
Router
Miter saw

PHYSICAL AND OCCUPATIONAL THERAPY TECHNICIAN (Cont'd)

Grinder
Work table with vise
Platen printing press
Printing supplies (solvent, ink, etc.)
Looms, table and floor
Weaving supplies (skein winder, spool rank, warp board, yarn, etc.)
Portable sewing machine
Hot plates
Orthotic splints and tools
Two basin sink (metal)
Vacuum (industrial)

Slide projector
Overhead projector
Movie projector and screen
Videotape player
Mark IV Fairchild projector
Articulated skeleton
Disarticulated skeleton
Muscle skeleton
Anatomical model-lower extremity
Anatomical model-upper extremity
Models: section of spinal cord, spinal cord, brain, heart, foot

Career Field: Medical Services

Course: PREVENTIVE MEDICINE TECHNICIAN (ADVANCED)

Catalogue No.: B-322-12/0 Course Date: 10/15/74

Course Description:

This course includes instruction in biostatistics; epidemiology; food service sanitation; habitability; industrial hygiene and safety; institutional environmental health; instructional techniques for training programs; mathematics for the sanitarian; meat, poultry, and fish sanitation; medical entomology and pest control technology; medical parasitology; milk and dairy sanitation; operational sanitation; preventive medicine administration, preventive medicine field training, public health law, public health microbiology, report writing, rodent control, sewage and refuse disposal, and water sanitation.

Comments:

This course requires completely equipped food service; medical, biochemical, bacteriology and microbiological laboratory facilities; as well as arrangements for visits to water processing plants; dairy facilities; meat, poultry, and food processing plants, etc.

A prerequisite for this course is the Basic Hospital Corpsman curriculum.

This course is now conducted at the Naval Hospital in Oakland, California by Navy personnel. Civilian students from Merritt Community College in Oakland take this course for 40 of the 60 credit hours leading to a certificate in Public Health Science. Navy students who qualify at Merritt for the 20 hours of general studies required for the certificate are graduated along with civilian students from Merritt, at Navy expense.

Because of the extensive equipment list necessary for this course, equipment is not detailed at the end of this summation.

PREVENTIVE MEDICINE TECHNICIAN (Cont'd)

Course Content:

Blocks		Hours
I	Biostatistics	22
II	Epidemiology	102
III	Food Service sanitation	52
IV	Habitability	24
V	Industrial hygiene and safety	46
VI	Institutional environmental health	40
VII	Instructional techniques for training programs	60
VIII	Mathematics for the sanitarian	21
IX	Meat, poultry and fish sanitation	36
X	Medical entomology and pest control technology	160
XI	Medical parasitology	46
XII	Milk and dairy sanitation	24
XIII	Operational sanitation	24
XIV	Preventive medicine administration	26
XV	Public health law	22
XVI	Public health microbiology	86
XVII	Report writing	40
XVIII	Rodent control	40
XIX	Sewage and refuse disposal	26
XX	Water sanitation	46
	TOTAL	946

PREVENTIVE MEDICINE TECHNICIAN (Cont'd)

Support Materials:

1. Instructor materials include curriculum guide, lesson plans and examinations totaling approximately 800 pages.

2. Student materials include course-generated study guides, handouts, worksheets and reading materials totaling 500 pages. In addition a reference library of approximately 1,000 volumes is required to teach the course.

3. 79 black and white 16mm films totaling 1,600 minutes
   22 color 16mm films totaling 660 minutes
   28 commercial color 16mm films totaling 900 minutes

4. 160 transparencies
   525 35mm slides
   50 2 x 2 slides
   50 charts
   500 glass specimen slides

Career Field: Medical Service

Course: TRANSPLANTATION TECHNICIAN (ADVANCED)

Catalogue No.: B-322-15/B Course Date: 3/15/75

Course Description:

This course covers: special operating room techniques including sterile technique, preparation of operating room and surgical patient and sterilization of instruments and packs; tissue banking including procurement, operation of processing equipment and storage of human tissues; transplantation of surgery including anaesthesia, surgical technique, care of experimental animals and use of monitoring equipment; bone marrow transplantation including support of critically ill patients in sterile patient isolator, operation of isolator equipment and collection of white blood cells and platelets using the cell separator; hemodialysis including support of acute and chronic patients on the artificial kidney machine prior to renal transplantation.

Comments:

A prerequisite for this course is Basic Hospital Corpsman. It should be noted that 320 hours of training in operating room techniques is conducted by personnel in the Operating Room Technician course; 200 of these hours are devoted to practical application. Of the total hours in Blocks II through V of this course, 773 are devoted to practical application. This course is in the process of revision. Professional personnel are utilized throughout the course both in the didactic and practical application phases.

Course Content:

Blocks		Hours
I	Operating room technique	
II	Tissue banking	310
III	Transplantation surgery	210

TRANSPLANTATION TECHNICIAN (Cont'd)

IV	Bone marrow transplantation	260
V	Hemodialysis	260
	TOTAL	1040

Support Materials:

1. Instructor materials totaling 500 pages.

2. Student materials totaling 2,200 pages.

3. Eight black and white films totaling 255 minutes.
   Four color films totaling 120 minutes.
   Eleven color commercial films totaling 298 minutes.
   Six sound/slide presentations totaling 384 color slides and 192 minutes of audio

4. 40 color transparencies
   24 color commercial transparencies
   2 black and white charts
   3 commercial color charts

Career Field: Medical Services

Course: UROLOGY TECHNICIAN (ADVANCED)

Catalogue No.: B-300-25/B Course Date: 11/15/72

Course Description:

Course trains students in skills needed to assist doctors in the care and treatment of urology patients. Upon completion, student should be able to:

1. Name and locate anatomical structures, describe physiological functions and recognize disorders and diseases of the male urogenital system and female urinary tract.
2. Prepare and provide an aseptic environment and sterile supplies for urology clinic procedures.
3. Assist, perform, monitor and report diagnostic procedures and tests to include roetgenographic procedures, clinic laboratory tests and clinic examing room procedures.
4. Administer medications and recognize patient drug sensitivity.
5. Identify and maintain specialized urology instruments.
6. Perform clerical management duties including patients flow, maintenance of records and ordering and storing of medical supplies common to urologic clinic operation.
7. Follow prescribed operating room techniques related to urologic surgical clinic operations.

Comments:

Prerequisite for this course: Hospital Corpsman (Basic). Navy prefers students to have had some ward experience. In addition, this particular course is structured in three phases: core related, didactic, and practical. In the core related phase students are sent to other schools for instruction, such as Operating Room School for surgical techniques, X-ray school for radiology and Laboratory school for urinalysis, semen analysis and bacteriology. Students are taught the broad concepts by these schools and are then returned to this course where they are instructed in the specialties relating to urology. Didactics in the urology school are followed by student performance in a hospital under close supervision, putting into practice the knowledge and techniques learned.

Course Content:

Blocks		Hours
I	Core-Related Operating Room, X-ray and Laboratory Schools	460
II	Didactic Urology	160
III	Practical Applications - Supervised	420
	TOTAL	1040

Support Materials:

1. Instructor materials includes lesson plans amounting to approximately 700 pages.
2. Student materials includes study guides, handouts, etc., amounting to approximately 300 pages.
3. Four black and white films totaling 66 minutes
   Five color films totaling 127 minutes
   Six color commercial films totaling 105 minutes
   Three color video cassettes totaling 93 minutes
4. 80 color commercial transparencies

Equipment:

Video playback machine and monitor
Motion picture projector and screen
Overhead projector
Binocular microscope
Safety head centrifuge

Multistix
Bililabstix
Graduated test tubes (15 ml)
Urine sugar test tabs
Hemocytometer pipette
New bauer slide
Slides
Slide covers
Safranin
Grams iodine
Crystal violet
Immersion oil
Acetic acid
Cotton tipped applicators
Super Edisonite
Primer of urinalysis
Sterile urine container
Unsterile urine container
Microbiology chits
Urinalysis chits
Eye dropper
Tourniquet
Vacutainer barrel
Vacutainer needle
Blood drawing tubes
Various X-ray machines
X-ray cassettes (14" x 17", 11" x 14", tomography)
Columnater
Various lead markers for films
X-omat RP processor
Safelight
Mechanical date imprinter
X-ray film identification printer
X-ray film (14 x 17, 11 x 14)
Flash cards
Coded X-ray jackets
X-ray chits
RP fixer
RP developer
Dark room
Patient measuring device
50cc syringe
Pediatric I.V. injection sets
I.V. tubing
I.V. extension sets
Reno-M-Dip
Renographin injectable (60%-76%)

UROLOGY TECHNICIAN (Cont'd)

Hypaque injectable
X-ray view box
Anatomical ruler
X-ray duplicator
Foroblique panendoscope lens
Right angle lens
Brownburger convex sheath with obturator (cleaning rods)
McCarthy sheath with obturator (cleaning rods)
Catheter delecting element
Cysto irrigation tubing
Stopcock
FibreOptic light cord
FibreOptic light source
Cysto irrigation bottle (3000 ml)
Cysto irrigation bottle hanger
Lidocaine 2% jelly
K-Y jelly
Ureteral catheters:
  1. Whistle tip
  2. Braasch bulb
  3. Cone tip
  4. Olive tip
  5. Spiral tip
Ureteral catheter adaptor
10cc syringe
Medicine cup
Bougie a Boule (8FR-30FR)
Walther Dilators (8-30FR)
McRea dilators (8-30FR)
Van Buren sound (8-30FR)
Filoforms & followers (3-30FR)
Wappler Cystourethroscope with obturator
Forblique lens
Right angle lens
Catheterizing bridge
Zipser clamp
Vaginal speculum
Iglesias resectoscope
Microlens foroblique
Resectoscope sheaths with obturators (24-26-28FR)
Surgery stopcock
Stabilized cutting loops
Standard cutting loops
Knife electrode
Roller electrode
Elcik evacuator
Flexible stem electrodes (various types)

UROLOGY TECHNICIAN (Cont'd)

Electrosurgical unit
Active dord
Ground plate
Thompson drape
O'Connor drape
Cup biopsy forceps
Jaw biopsy forceps
Flexible cystoscopic scissors
Bugby electrodes
Retrospective lens
Dormia stone basket
Johnson stone basket
Glass toomey syringe
Plastic toomey syringe
Rubber tubing
Scrub brush
Lowsley forceps
Urethrotome (Otis)
Various Foley catheters
Catheter stylet
Catheter plug
Catheter clamp
Closed system drainage bag
Leg bag
Robinson catheters
Cunningham incontinence clamp
Hendrickson lithotrite
Bigelow lithotrite
Clycine solution
Travenol biopsy needle
Vasectomy pack
Circumcision pack
O.R. prep tray
Catheterization and dilitation pack
Cysto and retrograde pack
Meatotomy pack
Disposable cysto drape pack
Halstead hemostats (curved/straight)
Kelly hemostats (curved/straight)
Surgical blade handle
Standard operating scissors
Iris scissors
Bandage scissors
Serrated dressing forceps
Toothed tissue forceps
Hudson tissue forceps

UROLOGY TECHNICIAN (Cont'd)

Kocher forceps
Backhaus towel forceps
Allis forceps
Needle holder
Bethadine scrub
Betadine paint
Phisohex soap
Betadine spray
Zephirin chloride
Urecholine
Cidex
Sterile water
Instrument milk
Lidocaine jelly
Lidocaine injectable
X-ray view box
Sterile surgeon's gloves
Sterile exam gloves
Unsterile exam gloves
Surgeon's gown
Surgery caps
Surgeon scrub brush
Steam autoclave
H_2O distilling unit
Guerney
Recovery bed
Emesis basin
Large round basin
Small round basin
Urinal
Various lab chits
CO_2 cystometer
Cotton tipped applicator
Various sutures
Various knife blades

Career Field: Medical Services

Course: X-RAY TECHNICIAN (ADVANCED)

Catalogue No.: B-313-26/B **Course Date:** 2/15/75

Course Description:

Course trains student in basic knowledge and skills required to operate X-ray equipment and conduct examinations and includes: human anatomy as applied to radiologic terminology and radiographic procedures; basic principles of electricity and circuitry; application of electronic principles to X-ray equipment and their components; theoretical and practical study of X-ray machines, equipment, patient use positioning and radiographic qualities; exposure charts, radiation protection devices; radiation tolerance, safety and reporting dosiemetry; effects of radiation on basic cell structure; X-ray therapy and nuclear medicine techniques; radiology employing contrast medias; film processing; ethics of physician/technician/patient relationships and instruction and close supervision in the performance of various examinations (see course content).

Comments:

Prerequisites for this course: Hospital Corpsman, (Basic). Phase II of the course (see course content below) is accomplished in a hospital under the direct supervision of a Board Certified or Board Eligible radiologist.

Course Content:

Blocks	Hours
I Mostly Didactic and Includes:	
Mathematics	38
Radiolographic Anatomy	125
Electronics of Radiology	145
Radiographic Technique	165

X-RAY TECHNICIAN (Cont'd)

	Radiation Safety	52
	Radiation Biology	38
	Survey of Radiation Therapy and Nuclear Medicine	58
	Special Procedures	42
	Darkroom Technique	57
	Ethics	15
II	Clinical Experience Including Instruction and Close Supervision in Performance of the Following:	
	Biliary and Alimentary Tract Examinations (Cholecystograms, cholangiograms, esophograms, upper G.I. series and barium enemas)	162
	Urinary System Examination, intravenous pyelography, nephrotomography, retrograde pyelography, cystography and selective renal arteriography	162
	Radiological Examinations of Gravid and Nongravid Female (hysterosolpingography pelvic pneumography, vaginography, fetography, placentography and the Coleher-Sussman method of pelvimetry	82
	Neurological X-ray Examinations (pneumoencephalograms, ventricalograms, myelograms and diskograms)	162
	Angiographic Insertion and Use of: automatic high pressure injector; 3-phase biplane X-ray system, the program selector, and high speed film changer	164
	Chest and Abdomen Radiography	82
	Orthopedic Radiology	182

ENT and Neurologic Radiography (facial structures, orbits, paranasal sinuses, mastoid region and skull)	82
Portable Radiographic Examinations	62
TOTAL	1875*

*Note: Extracted from a 2180 hour Navy course.

Support Materials:

1. Instructor materials includes lesson plans amounting to approximately 1300 pages.
2. Student materials include study guides, handouts, etc., amounting to approximately 545 pages.
3. Four black and white films totaling 114 minutes
   Two color films totaling 48 minutes
   Two commercial black and white films totaling 18 minutes
   Two commercial color films totaling 73 minutes
   Six color video-tapes totaling 124 minutes
   Two commercial color video-tapes totaling 47 minutes
4. 350 black and white slides
   100 color slides
   25 commercial color slides
   20 black and white transparencies
   1 commercial black and white transparency

Equipment:

Diagnostic radiographic machine with flurographic capabilities
Portable X-ray unit
X-ray view box
Lead aprons
Lead gloves
Foot stool
X-ray shield (portable)
Hand Positioning block tank processing unit complete
Automatic processing unit
Film storage bin
Sink

X-RAY TECHNICIAN (Cont'd)

Hangers for hand processing
Cardboard holders
Cassettes
Processing chemical storage area
X-ray viewbox
Faxitron, educational X-ray unit
Video tape player and monitor
Motion picture projector
Overhead projector
Human skeleton
Phantom
Stretcher
Radiation detection equipment

Career Field: Metal Trades

Course: MACHINIST (Basic)

Catalogue No.: A-702-0019/SD   Course Date: 10/15/72

Course Description:

This course provides training in: handtools and measuring instruments; blueprint selection, interpretation and transfer of basic layouts; mathematical problem solving and formula calculation; metal selection; single point cutting tools, drilling machines; close tolerance machining operations and preventive minor maintenance of lathes; milling machines, shapers, band saws, power hacksaws, etc.

Course Content:

Blocks		Hours
I	Safety Precautions Shop Area	1
II	Handtools and Measuring Instruments	21
III	Blueprint Reading and Sketching	8
IV	Basic Layout Procedures	7
V	Shop Mathematics	14
VI	Manufacture, Classification, Physical Properties, and Identification of Metals	8
VII	Shop Materials, Lubricants, and Coolants	4
VIII	Single Point Cutting Tools	5
IX	Drills and Drilling Machines	12
X	Bench and Pedestal Grinders	36
XI	Basic Lathe Operations	74
XII	Intermediate Lathe Operations	77
XIII	Advanced Lathe Operations	23

MACHINIST (Basic) (Cont'd)

XIV	Basic Milling Machine Operations	31
XV	Advanced Milling Machine Operations	39
XVI	Shapers	6
XVII	Miscellaneous Machines and Operations	12
XX	Maintenance and Material Management (3M) System	6
	TOTAL	384

Support Materials:

1. Instructor materials include a curriculum guide totaling 171 pages.
2. Student materials include texts, handbooks, and workbooks totaling approximately 1,982 pages.
3. Forty-one black and white films totaling 670 minutes. Two commercial black and white films totaling 59 minutes.
4. 51 black and white transparencies
   6 display boards
   25 charts

Equipment:

Drill press, bench type, 1/2" chuck complete with accessories
Drill press, heavy duty floor type, complete with accessories
Grinder, bench type
Grinder, pedestal type
Grinder tool post
Lathe, metal working, 13" x 60" bed complete with all accessories and attachments
Machine, bandsaw
Machine, hacksaws, power, heavy duty
Machine, metal engraving, pantograph, complete with attachments
Machine, milling, plain and universal, complete with all accessories

Machine, shaper, complete with attachments
Vise, bench
Welder, butt type, for bandsaw

Tools

Bar boring and holder
Bits, cutter, lathe
Bits, cutter, pantograph
Bits, cutter, shaper
Block, parallel and "V"
Bolts, "T"
Calipers, micrometer, outside, 0" to 1", 1" to 2", 2" to 3", and 3" to 4"
Calipers, vernier, inside-outside, 8", gear tooth
Calipers, spring, inside-outside, 4" to 6"
Chisels
Clamps
Cutters, pantograph
Cutters, milling machine
Die, thread cutting, fine and coarse series
Diestock
Dividers
Dressers, grinding wheel
Drills, twist, cutter combinations, special
Extractors
Files
Gages - acme, center, feelers, pitch, radius, wire, drill
Glasses, safety
Hacksaws, hand
Hammers, Ballpeen, assorted sizes
Indicator, dial, set
Mallets
Plate, surface
Pliers
Power tools, portable - electrical and pneumatic
  Drills
  Sanders
  Grinders
  Hammers
Protractors
Punch, prick, center
Reamers
Rules, Machinist steel, 6", 12", 18", and 24"
Screwdrivers, assorted types and sizes
Scribe
Squares, machinist's

Squares, combination set
Straight, edges
Table, layout
Tap, handles
Taps, hand, fine and coarse thread
Tool, bits, blank, 5/16"
Tool, knurling
Wrenches, adjustable and combo, hexagonal

16 mm Projector
Overhead Projector
Projector Screen

Materials

Blades, bandsaw, hacksaw
Bolts
Brass, stock
Chalk, marking, white
Dye, layout
Glass, magnifying
Key, stock
Lead, white
Oil, lubricating
Rags, wiping
Steel, stock
Wheels, grinding

Samples

Blueprints
Effects of heat
Gaskets and packing
Lubricating and Cutting Oils
Measuring specimens
Metals showing types
Metals - specimens for testing
Multiple lead threads
Plastics
Samples of metals
Special drills

Mockups

Cutters, pantograph
Gate valves
Gear ratio

MACHINIST (Basic) (Cont'd)

Grinder
Lathe
Micrometer caliper
Single point cutting tools
Valve and pump
Vernier scales

Career Field: Metal Trades

Course: WELDING, SHEETMETAL AND PIPEFITTING (Basic)

Catalogue No.: A-790-0010/SD Course Date: 7/17/74

Course Description:

This course trains students in basic shielded metal arc welding; basic gas welding, silver brazing and braze welding; basic sheet metal layout and fabrication; and basic pipefitting layout and fabrication.

Comments:

This course is completely self-paced and individualized. Although it is established in the Navy as a twelve week curriculum the average time for completion is approximately nine weeks. Ninety percent of the contact hours in the course is spent in "hands-on" modularized exercises. The instructional sequence utilized in the course is as follows; student reads introduction to module, student then works his way through a written module and is tested and evaluated by his instructor, student proceeds to shop carrel and performs hands-on activities prescribed in the module. As the student completes each module he proceeds to the next and eventually works his way through the entire course at his own pace.

Facilities necessary to utilize this excellent system-design include; a typical "learning center" with individual carrels where the students perform the written portions of each module and four other "hands-on" centers where the students perform the actual working tasks involved in each module in what amount to individual "working" carrels equipped with everything necessary for the student to do the work prescribed in the step-by-step modules of instruction that outline his tasks.

Course Content:

Blocks	Hours
I Arc Welding Center Shielded metal arc welding in flat, horizontal, vertical, overhead, and	90

WELDING, SHEETMETAL AND PIPEFITTING (Basic) (Cont'd)

	fixed pipe positions	
II	Gas Welding Center Gas welding, silver brazing, braze welding	90
III	Sheetmetal Work Center Sheetmetal layout and fabrication of sheetmetal products utilizing straight line, parallel line, radial line, and triangulation methods of development	90
IV	Pipefitting Work Center Pipefitting layout and fabrications (hand and power tools)	90
	TOTAL	360

Support Materials:

1. Instructor materials include a curriculum guide totaling 30 pages.

2. Student materials include programmed modules and job sheets totaling 660 pages.

3. 12 Charts

Equipment:

Arc Welding Center

Chipping Hammer
Wire Brush
Pliers
Bench and Pedestal Grinder
Welding Rods and Plates
Protective Equipment:
  hat, gloves, jacket, helmet
Carrel
  Bracket for holding plates
  Welding Stinger and Machine
  Rod Locker (heated)

Gas Welding Center

Carrel
GW Torch
Oxygen Acetylene Gauge
  on supply line
Igniter
Pliers
Wire Brush
Deck-Fire Brick
Welding Goggles
Brazing and Silver Braze
  Flux

WELDING, SHEETMETAL AND PIPEFITTING (Basic) (Cont'd)

Gas Welding Center (Cont'd)

- Consummable Rods (brazing and silver brazing)
- File
- Tip Cleaner

Sheetmetal Work Center

- Power Metal Cutting Shear
- Cornice Brake
- Box and Pan Finger Brakes
- Slip Form Roller
- Turning Roll
- Turret Punch
- Bar Fold
- Vises
- Anvils
- Ring and Circular Shear
- Forming Stakes
- Soldering irons and flux
- Tool box with following:
  - hard face hammer
  - soft face hammer
  - knife edge file
  - half round file
  - file handle
  - screw driver
  - combination square
  - prick punch
  - aviation snips (s)
  - aviation snips (r)
  - aviation snips (l)
  - 18" straight edge
  - mortising marker and gauge
  - 10" dividers
  - 6" dividers
  - hand groover
  - tin snips
  - pliers
  - scribe

Pipefitting Work Center

- Cutting Torch and Circle Cutter
- Rosebud Heating Torch (Multiflame tip)
- Welding Machine and Accessories
- Pipe Benders
- Marvel Cutting Band Saw
- Drill Press
- Tubing Cutter
- Pipe
  - Vises
  - Reamer
  - Wrenches
  - Threading Dies
  - Cutter
- Carrel
  - Flanges only to attach finished pipe
  - Tool box with following:
    - 12" dividers
    - 10" pliers
    - Ball Peen Hammer
    - Center Punch
    - 360° Protractor
    - 5/8" Combination
    - Half Round File
    - Flat File
    - 2 pr Safety Glasses
    - 10 Tool Tags
    - Rat Tail File
    - 18" Steel Rule
    - Combination Square with Center Head
    - Sliding T-Bevel
    - Phillips Head Screwdriver
    - Standard Screwdriver

Pipefitting Work Center (Cont'd)

- 6' or 10' Measuring Tape
- Torch Igniter
- Scribe
- 30-60-90° Triangle

Learning Center

Drawing Equipment

- Small Drawing Set
- 18" Straight Edge
- 90-45° Triangle
- 30-60° Triangle
- French Curve
- Metal Samples

Career Field: Metal Trades

Course: HEAT TREATMENT OF METALS (BASIC)

Catalogue No.: A-702-0021/SD Course Date: 2/16/72

Course Description:

This course furnishes technical knowledge and skills necessary to effectively heat treat metals. It includes: commonly used metallurgical terms and basic physics as they relate to heat treatment of metal; metal alloy systems and function of alloying elements and their effect on the physical properties of metal; methods of classifying metals; theory of hardening; heat treatment of carbon and alloy steels and nonferrous metals; case hardening and types of steel that can be case hardened; performance of case hardening to achieve specified depth of hardness; types of metals and non-metals used for protective plating, protection they offer, and application procedures; types of metallic corrosion and causes; and common preventive measures to minimize corrosion.

Comments:

Blocks VII and VIII (see Course Content) have been excluded from this report because they apply only to the Navy. A complete heat treatment shop is needed to teach this course.

Course Content:

Blocks		Hours
I	Introduction	1
II	Properties of Metals Applicable to Heat Treating	42
III	Metal Alloy Systems	34
IV	Identification and Classification of Metals	24
V	Heat Treatment of Metals	122

VI	Corrosion and Surface Treatment of Metals	17
	TOTAL	240*

*Note: Extracted from a 281-hour Navy course.

Support Materials:

1. Instructor materials include a curriculum guide totaling 64 pages.
2. Student materials include texts, information sheets, and job sheets totaling 263 pages.
3. Six black and white films totaling 115 minutes.
   One commercial black and white film totaling 18 minutes.
4. One chart
   110 black and white transparencies

Equipment:

Forge
Hardness Testing Machines
  Barcole Comparator
  Brinell Tester
  Rockwell, superficial, Model 3JR
  Rockwell, regular, Model 4JR
  Rockwell, regular, Model 8JR
  Shore Scleroscope
Heat Treating Furnaces
16mm Projector
Overhead Projector
Projector Screen
Heating, 2350 Du-All
Tempering, 1350 Du-All
Impact Tester
Improvised Heating Devices
Magnetic Particle Inspection Machine
Microscopes, 500 power, and transformer
Oxyacetylene Torch sets
Pack Carburizing Boxes
Pedestal Grinder
Pyrometers

HEAT TREATMENT OF METALS (Cont'd)

- Salt bath, type OD18, low temperature
- Spark Testing Cabinet
- Tank, jominy
- Tensile Test Machine, 60,000 PSI
  - Tinius Olsen

Tools

- Carburizing Media
- Cold Chisels
- Energizers
- Hand Files
- Machinist's Hammers
- Temperature Indicating Crayons
- Tongs, blacksmith's

Materials

- Acid
- Asbestos Gloves
- Metals to be heat treated
  - SAE 1020
  - SAE 1040
  - SAE 1060
  - SAE 1090
  - SAE 4140
  - Stainless Steel 440C
  - Tool Steel 01
  - Tool Steel S5
  - Tool Steel M2
  - Aluminum
  - Copper
  - Pumice
  - Sandpaper, wet and dry
  - Variety of metal samples
  - Corroded metals

Career Field: Metal Trades

Course: CORROSION CONTROL (SHORT)

Catalogue No.: C-000-3177/N Course Date: 8/15/73

Course Description:

This short course prepares the individual to identify and treat all types of corrosion generally experienced on aircraft and other equipment used in marine environments.

Comments:

This course has recently been completely programmed, and 90% of it is individualized and self-paced.

Course Content:

Blocks		Hours
I	Introduction	8
II	Detection and Identification	8
III	Removal	8
IV	Preservation	8
V	Applications Laboratory	40
	TOTAL	72

Support Materials:

1. Instructor materials include lesson plans and examinations totaling 88 pages.
2. Student materials include information sheets, workbooks, and five programmed instruction units totaling 172 pages and one Government Printing Office document.
3. One black and white film totaling 20 minutes. Four color films totaling 87 minutes.

CORROSION CONTROL (Cont'd)

4. 19 Transparencies

Equipment:

Hydrolosis Demonstrator
Surface Tension Demonstrator
Aluminum Sheeting
Corrosion Protection Solutions (Alladyning)
Corrosion Control Kit
Samples of Corroded Materials
Abrasives
Polishers
16mm Motion Picture Projector
Overhead Projector
Projection Screen

Career Field: Meteorology

Course: AEROGRAPHER (Basic)

Catalogue No.: C-420-2010/L Course Date: 6/22/73

Course Description:

Course trains students to be weather observers and plotters in typical weather service offices.

Comments:

This course is presently 70 percent self-paced. It is expected to be 100 percent self-paced by January 1, 1976.

Course Content:

Blocks		Hours
I	Introduction	40
II	Surface Observations	233
III	Weather Charts and Messages	180
IV	The Weather Office	145
	TOTAL	598

Support Materials:

1. Instructor materials include instruction guide, lesson plan, tests and quizzes totaling 886 pages.
2. Student materials include programmed instruction, handouts, charts and forms totaling 1952 pages.
3. Five color film totaling 130 minutes
   One commercial color film totaling 60 minutes
4. Three slide/sound presentations consisting of:
   220 Slides
   Three cassettes totaling 95 minutes

Equipment:

- Water activated lighting unit
- Grade A Helium Gas
- Helium gas cylinder, 200 cu. ft. capacity
- Mast support
- Wind speed and direction recorder
- Wind speed and direction indicator
- Wind speed and direction detector
- Mercurial barometer
- Portable wind measuring set
- Precision aneroid barometer
- Instrument shelter
- True wind computer
- Precipitation gage
- ALFAX unit support set
  - 12 rolls ALFAX paper
  - 1 endless loop electrode
  - 1 helix support strip
  - 2 helix wires
- Maximum range thermometer
- RD - 108 ()/ UMQ-5 chart
- Aneroid barometer mounting base
- Marine barograph chart
- ALFAX unit support set
  - 12 rolls ALFAX paper
  - 4 helix wires
  - 2 helix strips
  - endless loop electrode
- Density altitude computer
- Vane tail
- Sling type psychrometer
- Psychrometer rotor
- Minimum thermometer
- Sling psychrometer wooden handle
- Electric psychrometer
- Psychrometer computer
- Recording chart for use with recorders
- Department of Defense weather plotting chart
- Skew T - Log P Diagram
- 35 ft. whip antenna
- Teletypewriter rectifier
- Teletype panel
- 18 ft. whip antenna
- APT tracking diagram
- APT System meteorological satellite plotting board

AEROGRAPHER (Cont'd)

Helix recorder model 319EA, Alden Electric Company
Marine recorder model 519 EA, Alden Electric Company
Service "A" teletype (Bell Telephone)
Service "C" teletype (Western Union)
USAF Conus meteorological teletype system (COMET) ADCAD 1st. Net
USAF Conus meteorological teletype system (COMET) OWS 2nd. Net
Antenna system
Semi-automatic meteorological station
Meteorological data receiver recorder set
Automatic weather station
Weather television system
Frequency converter Shift CV-172A/U
Aero teletypewriter
Radio receiver R-390A/URR
Radio receiver 1051 B
Frequency converter shift AN/URA-17 B
Comparator converter
Frequency converter Shift CV 2979/UX
Radio modulator
Facsimile recorder
Teletypewriter ASR AN/UGC-7A
Antenna filter assembly
Teletypewriter AN/UGC-6K
Weather data recorder
Surface weather observation form (land station) MF1-10A
Surface weather observation form (land station) MF1-10B
Surface weather observation form (ship station) MF1-11
Sound motion picture projector
Projection screen (tripod)
Overhead projector
Photographic processed film, clud form
Slated Globe, 25 inch device #1FF2A
Mercurial barometer (prototype)
Slated Globe, 25 inch device #1FF2B
Wall projection screen
Sound reproducer
Present weather study cards
Tropospheric circulation demonstration device
Still opaque object projector
U.S. relief map
World relief map
Psychrometric computer

Career Field: Meteorology

Course: RADIOSONDE SET OPERATOR (SPECIAL)

Catalogue No.: C-420-2013/L Course Date: 6/13/74

Course Description:

Trains students to operate upper air equipment and evaluate upper air data.

Comments:

Navy requires graduation from Aerographer (Basic) course for entry into this course. Graduates are qualified for service with the United States Weather Bureau or with commercial air lines.

Course Content:

Blocks		Hours
I	Evaluation of Upper Air Data	56
II	Equipment and Procedure AN/SMQ	80
III	Equipment and Procedures AN/GMD-1	124
	TOTAL	260

Support Materials:

1. Instructor materials include curriculum guides, lesson plans, exams, quizzes and tests totaling 430 pages.
2. Student materials include handouts totaling 21 pages
3. 31 transparencies
   42 charts

Equipment

Reducing valve
Signal generators
Battery

RADIOSONDE SET OPERATOR (Cont'd)

Appropriate Test Equipment
Temperature element
Weight set
Control recorder chart
300 gram balloon
MET. parachute
Baseline check set
Radiosonde
Helium adapter kit
600 gram balloon
Temperature element
RSO launching reel
Shroud
Humidity chamber
Recording AN/SMQ - 1 Chart
Psychrometric computer
1200 gram balloon
Recording AN/TMQ - 5 charts
GMD recorder ribbon
AMT-11E transmitter
Humidity element
Humidity evaluator
Temperature evaluator
Ballpoint pen cartridge assembly
Plotting and Graphing Set
Psychrometric computer
Psychrometer Tube (-38 to +45°C)
Psychrometer replacement tube set
Barometer
Humidity element GMD
Balloon distance chart set
Radiosonde receptor AN/SMQ-3
Radiosonde recorder
Radiosonde receptor AN/SMQ-1
Rawin Set AN/GMD-1
Multi purpose display board
12" triangle
Class A helium gas
Recorder pen drive cable AN/SMQ
Skew T Log P diagram
Weather plotting adiabatic form
Winds aloft form
Tropopause WBAN - 31B1 Form
Drift Correction nomograph form
Antenna cable
Overhead projector

Career Field: Meteorology

Course: WEATHER ANALYST (ADVANCED)

Catalogue No.: C-420-2011/L **Course Date:** 8/3/73

Course Description:

Course trains students to be weather analysts in typical weather service office.

Comments:

Prerequisite to this course is completion of the Aerography (Basic) course of equivalent.

Course Content:

Blocks		Hours
I	Centrally Prepared Analysis	138
II	Forecasting Techniques	150
III	Weather Forecasts	100
IV	The Weather Office	95
V	Regional Analysis and Forecasting	57
VI	Weather Chart Analysis	60
VII	Oceanography	100
	TOTAL	700

Support Materials:

1. Instructor materials include curriculum guides, instruction guides, lesson guides, examinations and quizzes totaling 1237 pages.
2. Student materials include programmed instruction, handouts, study manuals, and worksheets totaling 2000 pages.

3. Two black and white films totaling 52 minutes
Six color films totaling 83 minutes
Two commercial color films totaling 55 minutes

4. 300 transparencies
100 charts

Equipment:

SST plotting chart
Maneuvering Board
Support mast
Wind speed and direction recorder
Indicator ID-300
Detector ML-400
Barograph (marine)
Precision Aneroid barometer
Ink (UMQ-5)
ALFAX unit support kit
RD-108 chart
Rotor Assembly ML-400
Pen assembly UMQ-5
Aneroid barometer base
Marine barograph recording chart
ALFAX unit support kit: U/W AN/GKR-7, AN/SMQ-6 and AN/GMQ-14
AN/GMQ-14 chart
United States chart
Skew T Log P Diagram chart
SHARPS form
Drafting instruments set
Semicircular protractor
12" drafting triangle
6" drafting dividers
Helix recorder Model 9271H (Alden Electronics Co.)
Service "A" Teletype (Bell Telephone)
Service "C" Teletype (Western Union)
USAF Conus Meteorological (COMET I) teletype system
USAF Conus Meteorological teletype system (COMET II)
APT receiver/recorder meteorological data set
Semiautomatic meteorological station
Remote television monitor viewer
Expendable bathythermograph
Weather television system
Automatic weather station
Antenna system
Weather data receiver/recorder set

WEATHER ANALYST (Cont'd)

Weather data recorder
Expendable bathythermograph probe
Helix recorder Model 9244T (Alden Electronics Co.)
16mm motion picture projector
Motion picture screen
Overhead projector
Multi-purpose display board
Slide projector
Blue world slated globe
Opaque projector
World relief map
Gunnery film assessor projector

Career Field: Oceanography

Course: DIVER (Basic)

Catalogue No.: A-433-0022-32/SD Course Date: 6/72

Course Description:

This course is designed to introduce qualified students to scuba, lightweight, and deep sea diving; underwater work, tools, cutting and welding; marlinespike seamanship; salvage machinery; and the repair and maintenance of diving equipment.

Comments:

Students accepted for the curriculum must be in top-flight physical and psychological condition and qualified as expert swimmers. In the Navy our divers are volunteers!

Course Content:

Blocks		Hours
I	Diving Orientation	35
II	Diving Physics and Physiology	36
III	Medical Aspects of Diving	30
IV	Scuba	72
V	Lightweight Diving	36
VI	Underwater Work	60
VII	Underwater Tools	36
VIII	Underwater Cutting and Welding	30
IX	Marlinespike Seamanship	8
X	Salvage Machinery	6
XI	Helmet and Dress Repair	15
	TOTAL	364

Support Materials:

1. Instructor materials include a curriculum guide and lesson plans totaling 272 pages.

2. Student materials include texts totaling 838 pages.

3. 12 black and white films totaling 300 minutes.
   8 commercial black and white films totaling 200 minutes.

Equipment:

Amplifiers, divers
Boats, as required for diving and safety
Bottles, scuba
Compressed air source
Compressor, 125 cfm
Deep sea diving outfits, complete
Excavating pumps with hoses and nozzles
Ladders, diving
Lightweight diving outfits, complete
Manifold, charging, high pressure air
Recompression chamber and associated equipment
Regulators, oxygen cylinder
Scuba, open-circuit outfits, complete
Swimming area Tanks, training
Welding generators, and cables
Tools
Cable cutters
Caulking tool set
Chisels
Drill, electric, hand, 1/4"
Fids 12", 28"
Furnace
Electric Bench Grinders
Hammers
High velocity stud driver
Hydrostatic pump for testing air hose
Serving mallet
Wooden mallet
Marlinespikes
End-cutting nippers
Oxyacetylene cutting outfit, complete
Oxy-arc underwater cutting torches
Sailmaker's palm
Pliers

Plumbers ladle
Pneumatic drill
Pneumatic hammer with chisels
Pneumatic impact wrench
Pneumatic saw
Sailmaker's prickers
Punches
Rivet punch and die
Hand roller
Two-man hand hacksaws
Screwdrivers
Shears and scissors
Soldering iron, electric
Sharpening stone
Tap and die sets, to 5/8"
Measuring Tape
Vise, soft jaws, bench
Vise, wire rope splicing, 3/8" and 1 1/2"
Wrenches

Supplies and Materials

Tool bags
Web belts
Brass toe caps
Bolts, various sizes
Blow hoses
Bright work polish
1" brushes
Buddy lines
Shoe buckles
Canvas, duck, nos 6 and 8
Goodrich cement #4
Underwater compasses
Male and female air hose couplings
Crocus cloth
Driver's cuffs
Depth gauges wrist
Divers reproducers
Drill bits
Electrode holders
Underwater cutting electrodes
Underwater welding electrodes
Flanges and gaskets
Test pressure gages
Divers' gloves
Hoses, gases
Diver's knife

DIVER (Basic) (Cont'd)

Lead soles
Lead weights
Leather
Lifeline and amplifier cable
Litharge and glycerin
Lumber (project fabrication)
Marline
Swimmer's face masks
Nails, various sizes
Nuts, various sizes
Oxygen
Patching materials
Patching templates
Patching stands
Pipe, various sizes (project fabrication)
Plate, steel, various (project fabrication)
Rags
Reducers, air, "S" and "T" types
Rivets
Rod, brazing with flux
Rope, fiber, various sizes
Rope, wire, various sizes
Sealing compound
Oil separator
Shackles, various sizes
Solder, flux, and acid
Safety switch
Swim fins
Swimmers' marker buoys
Tape, friction, rubber, plastic
Measuring tape
Thimbles, various sizes
Underwater wrist watch
Washers
Wet suits
Wire, various sizes
Wooden plungs

Career Field: Oceanography

Course: SUBMARINE SYSTEMS (PREP)

Catalogue No.: A-060-0012/GR **Course Date:** 8/1/74

Course Description:

This course has been extracted from the full Navy curriculum which serves as an introduction to the submarine service. It introduces the student to the historical background, theory and operation of modern undersea vessels.

Comments:

While the emphasis of this course is on conventional submarines, the course would certainly be applicable in schools of oceanography where all types of undersea operations are studied.

Course Content:

Blocks		Hours
I	Submarine History and Development	2
II	Submarine Configuration	2
III	Introduction to Valves	1
IV	External Installations	2
V	Main Ballast Tanks	1
VI	Hovering and Depth Control	2
VII	Trim System	4
VIII	Drain System	1
IX	Submarine Air Systems	3
X	Main Ballast Tank Blow Systems	2
XI	Hydraulic Systems	4

SUBMARINE SYSTEMS (Cont'd)

XII	Steering and Diving Hydraulics	2
XIII	Submarine Habitability	4
XIV	Ventilation System	4
XV	Atmosphere Control	2
XVI	Submarine Electrical Systems	3
	TOTAL	39

Support Materials:

1. Instructor materials include one instruction guide totaling 226 pages.
2. Student materials include programmed instruction and handouts totaling 165 pages.
3. Three color films totaling 75 minutes.
   Three black and white films totaling 44 minutes.
4. 74 Slides
   38 Transparencies
   Three charts

Training Aids:

Trim system training device
Hydraulic system training board
IMO pump
Lead accumulator
Hydraulic control valve, head pump and valve position indicator
Sternplanes training board
Fairwater planes training board
Ship control station training device
TDU ball valve
Electrical distribution display board

Equipment:

16mm motion picture projector
movie screen
Overhead projector
Slide projector

Career Field: Personal Services

Course: SHIPBOARD BARBER (BASIC)

Catalogue No.: A-840-0012/N Course Date: 10/15/74

Course Description:

This course trains students in the skills necessary to become basic barbers.

Comments:

Students here work on each other, on their instructors and anyone who will volunteer. The investigator who reviewed this course volunteered with very satisfactory results.

Course Content:

Blocks		Hours
I	Introduction	1
II	Barber Tools and Equipment	2
III	Face to Face Contact	1
IV	Haircutting	6
V	Management and Operation	1
VI	Skin Diseases - Sanitation and Sterilization	2
VII	Honing, and Sharpening	3
VIII	Neck Shaving	3
IX	Practice Shop Time	115
	TOTAL	134

Support Materials:

1. Instructor materials include lesson plans and tests

SHIPBOARD BARBER (Cont'd)

totaling 120 pages.

2. Student materials include texts and handouts totaling 325 pages.

3. 12 Transparencies

Equipment: (per student)

smock
2 clippers (motor and vibrator) and associated equipment
assorted combs
Scissors (regular and thinning)
Razors
Hones and straps
Overhead Projector

Facilities:

Complete Barber Shop
1 chair per 2 students

Career Field: Personal Services

Course: SHIPBOARD LAUNDRY OPERATOR (SHORT)

Catalogue No.: A-840-0011/N   Course Date: 10/15/74

Course Description:

This short course is designed to provide students with the knowledge and skills necessary to operate basic commercial laundry equipment and to serve customers on a face to face basis.

Comments:

Totally compatible with commercial operations.

Course Content:

Blocks		Hours
I	Introduction	1
II	Laundry Scheduling and Receiving	11
III	Assembling and Issuing	7
IV	Water	1
V	Washing Supplies and Formulas	2
VI	Operation and Maintenance	26
VII	Performance Test	6
VIII	Face-to-Face Contact	2
IX	Written Test	2
	TOTAL	58

Support Materials:

1. Instructor materials include lesson plans, curriculum guide, and tests totaling 74 pages.

2. Student materials include texts, study guides, and handouts totaling 250 pages.

3. 5 Charts

Equipment:

2 100 lb. Washers
2 50 lb. Dryers
Flat Work Iron (Mangle)
6 Pressers (Class D's)
3 Pressers (Class A's)
1 CBC and Body Press
Folding Table
Marking Machine
Laundry Carts